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The Ancient Cathedrals of Scotland: IV., St. Magnus, Kirkwall.—Drawn by Mr. Alexander McGibbon ..... *Double-Page Ink-Photo.*
Plan of St. Magnus, Kirkwall.—Drawn by Mr. Alexander McGibbon, based on plan by Sir Henry Dryden ..... *Double-Page Photo-Litho.*
St. Matthew's Church, Morningside, Edinburgh.—Mr. Hippolyte J. Blanc, Architect ..... *Double-Page Photo-Litho.*
Cartoon for Window, St. Helen's, Sephton.—By Mr. F. Hamilton Jackson ..... *Double-Page Ink-Photo.*

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The Arts and Crafts Exhibition.

THE present exhibition, opened this week at the New Gallery, serves to confirm the opinion we expressed in regard to the last exhibition of the kind, that it would be much wiser not to attempt to keep it up annually. In such cases the difficulty of finding an adequate amount of furniture and decorative work of a high class to fill the rooms each year inevitably leads, as the last Arts and Crafts Exhibition too clearly showed, to bringing in the element of trade display and going to large dealers to supply a sufficiency of exhibits which cannot be kept up by other means. For it must be remembered that the theory on which the Arts and Crafts Exhibitions are based, viz., that all work should be exhibited under the names of the people who actually designed and executed it, and not under the name of a firm which deals merely in such articles—though a most wholesome one, is one so opposed to the habits of the day in regard to the manufacture and sale of furniture and fittings, that there is no very large store of design and workmanship to draw upon, and it becomes necessary to allow some time for the evolution of new ideas and new work, if the interest of the exhibitions is to be kept up to the level promised in its first and second years. The exhibition has now been dropped for two years, and the one at present open is a very good one, in which the trade element is, at all events, not predominant. There are one or two cases of articles by well-known firms, it is true, who specially pose as art-producing firms, bur who would probably have no objection to give the names of designers and workers if they had been specially asked to do so; and we cannot help thinking that in these cases there has been some carelessness on the part of the committee. As the Arts and Crafts professes to represent personal work, this principle ought to be carried out rigidly. We observed, too, on private view day, a case filled with *priced* articles—a practice which would at once convert the exhibition into a furniture and *bric-à-brac* bazaar; but we were glad to observe that these obnoxious price-tickets had been removed on the public opening day.

The furniture designs are those which, of course, come most directly within our province, although in one sense they are less so here than in many other collections, for a reason which is in itself a gratifying one; they are not imitative of architectural forms. Not that we necessarily scout the introduction of imitations of architectural forms in the more sumptuous class of furniture design, provided the detail is modified so as to be suitable to its position and the material used. But for good furniture for ordinary use rather than for show we want design which arises naturally from the material out of which the thing is made and the use to which it is to be put. It is in this respect that the influence of the Arts and Crafts Exhibitions has been and continues to be very wholesome. It shows us examples of furniture which in design professes to be nothing but furniture; in which a table-leg is a table-leg and not a column or a baluster; and which nevertheless are designed so as to have artistic interest and expression. Among these some of the best are those designed by Mr. Reginald Blomfield, an architect who has shown a special faculty for furniture design. His inlaid sideboard (12), made by Mr. G. A. Mason, is one of the best things in the rooms, simple and suitable in form; the inlays consist of three conventional flowers in the back of the sideboard, of which the side ones are admirable in outline and effect; the centre one, a rose, not so successful; the rose is too sumptuous a flower, and one in which outline has too little a place, to be successfully conventionalised. The small checquer inlay diaper which forms a surface ornament is original and effective. By the same designer is a rosewood settee made by Mr. J. Urand (175), a cane-lined seat of ample depth, the arms at the ends worked with a bold and effective sweep, the whole depending almost entirely on form and good workmanship for its effect. Mr. Blomfield's "Print Cabinet" (150) by Mr. Mason, is boldly treated in inlay in oak, walnut, and ebony; we do not like the form so much as in the other examples, nor the effect of the black inlay down the middle of the fronts of the drawers, which does not seem to have any reason.

All these, however, show the hand of the architectural designer, though there is not an architectural detail (in the usual sense) in them; and it is this particular hand that we want in furniture design. We seem to miss it, for example, in the cabinet in Italian Walnut (93) designed and carved by Mr. G. Jack, the joinery by Mr. W. Thatcher. The best portion is the long lower panel of very freely and boldly treated flat foliage; but the transition from the legs to the body of the cabinet is awkwardly managed, or we might say not managed at all; there is a break as if the two parts had not been made for each other. Among the simpler things in which the architect's hand is very apparent is the "Oak Writing Cabinet" (85) designed by Mr. Charles Spooner, and executed by Mr. W. Hall and Mr. W. Randall. This is very plain though solid work, and depends for its interest as design mainly on outline; notice especially the shape into which the sides are cut, with the wavy line at the top, and the lines on which the front of these side-pieces is worked. The care given to line in these small details is just what separates a plain piece of furniture like this from ordinary joiner's work. The same quality of line and shaping is shown in the oak arm-chair (27), designed by Mr. Lethaby.

In some of the furniture we find rather too great a tendency to the virtue of plain solidity. The piano (240) designed by Mr. W. F. Cave and executed by Mr. C. Beckstein (we rather doubt if "executed" is correct here) has a decided practical result in the management of the candle-holders. These are usually metal brackets attached to the front, with the double disadvantage that the light cannot be got at a convenient angle with the book, and that almost invariably these metal appendages are liable to rattle and cause annoyance to the player. In this piano they are fixed on a continuation upwards of the front legs of the piano, which rise past the keyboard to the level required for the candles. Thus they form a part of the solid framework of the case, and stand

well out in front of the instrument. But considering that a piano is generally a piece of drawing-room furniture, is not this one somewhat too heavy, too massive, too straight-lined for civilisation? It is more like a very well made and rather costly "cottage piano," too costly for such a purpose, and hardly refined enough in appearance for the *salon*. We find the same fault with Mr. Voysey's "Lady's Work-cabinet" (134), executed by Messrs. W. Hall and J. Wall, hinges by Mr. W. B. Reynolds, of the "Wood Handicrafts Society" (it is not easy to see what this society specially has to do with decorative brass hinges). This is a fine solid piece of furniture, of original design, and convenient in arrangement; but we demur to the idea that it is specially a "Lady's" cabinet. It is too square and too heavy for that. A piece of furniture intended specially for a lady's use should surely be marked especially by grace of line and comparative lightness of parts and construction, which is certainly not the case here. Mr. Macartney's "Escritoire" (105), made by Mr. J. Hall, and not described as a lady's piece of furniture, is obviously and appropriately such nevertheless. It is light, elegant, graceful, though of thoroughly sound make; the design of the legs and feet is particularly good. The plain leather-seated arm-chair, designed by Mr. W. H. Bidlake and Mr. Arthur S. Dixon (183; we do not quite see where was the necessity or the chance for *two* designers), and made by the Birmingham Guild of Handicraft, is a good piece of plain unpretentious work. Near this is a large and sumptuous "Linen-press" (184), designed by Mr. Lorimer and executed for Morrison & Co. by Mr. A. Paterson, of inlaid walnut; an excellent piece of workmanship—the drawers most honestly fitted and finished; it is embellished on the top and bottom rails with inlaid swans in white wood which are cleverly contrived to appear to float upon the sinuosities of grain of the walnut wood. There is no particular point in this decoration, but it is more satisfactory than what Mr. Lethaby calls the "coarse inlay" of his oak chest (147), in which sheep are inlaid in rather rude outline with their legs cut and inlaid separately in a very primitive fashion. We remember this or some work of the same kind in one of the Kenton Society's exhibitions; it hardly commends itself to us. If animals are introduced at all in inlay, we should like to have something a little less "wooden" than these. Nor can we quite make out the charm of the same clever designer's "Door for a Nursery" (225). Why this disagreeable green tone, and why paint the stiles with an apparent imitation of metal bandaging? This is surely initiating the children's mind into the idea of sham construction or sham material, which they will learn soon enough.

On the other hand, Mr. Lethaby is at his best in his original and refined design of a "Marble Chimney-piece" (42), executed by Messrs. Farmer & Brindley. To carry out the principle of the exhibition thoroughly we should have had the names of the men in Messrs. Farmer & Brindley's employ who made it; and we fear we should have felt called on to complain a little as to the bad joining of the thin slabs which form the sides and top: not very good workmanship. The design is exceedingly simple and restrained, but quite original and a thorough piece of architect's work. In the flat portions an effective use is made of the contrast of slabs of white and grey mottled marble. Among other pieces of work connected with the fire-place we have the "cast-iron grate," with beaten and polished lintel, designed by Mr. G. Jack and executed by Messrs. Longden & Co., "assisted by W. Middleton, W. Vickers, W. Bullas, and W. Knowles:" a very good and effective piece of work. Over this is Mr. G. Jack's "chimney breast" (168) in modelled and coloured plaster, divided into panels each of which contains in the centre a coloured study of a flying sea-bird in bas-relief; these birds are very carefully studied, and the whole forms a most suggestive and poetic kind of ornament for a seaside house. The "Chimney piece in carved alabaster" (176) by Mr. H. Wilson and Mr. F. W. Pomeroy, looks as if it was intended for Welbeck Abbey, from its general similarity with the style of decoration of the Welbeck Abbey Library (illustrated in the *Builder* for September 23). The carving is executed in a flat relief which is very pleasing to the eye; the colour produced by inlays and voussoirs to the chimney arch is rich in effect; it rather strikes one, however, as if colour and texture had been more thought of than form; the whole seems rather square and heavy in effect, and we do not see the relation in design between the main portion of the work and the erection over it, variegated with inlaid discs in dark marble.

In speaking of the furniture properly so called, we should not have passed over Mr. Alma-Tadema's fine and classical-looking "Studio Seat" (84), a low broad settee without back or arms, with short heavy moulded supports, and diversified with inlays of mother-of-pearl and other material. We fancy we have seen this in one of the artist's paintings. The plain leather straps which confine the wide cushion seem a little out of keeping with the richness of the rest of the work, as if they wanted some little stamped surface ornament to bring them into place.

One of the most important exhibits, and one of the greatest interest, consists in the series of drawings illustrating Mr. W. B. Richmond's designs for the colour decoration in mosaic of St. Paul's Cathedral. Two of the full-size cartoons are hung in the central hall: this is hardly the place to judge of their effect, as the space is not great enough, and they are too near the eye, and lose also by being dissociated from their proper architectural framework. It is from the series of small "First Sketches" (54 to 69) hung in the west room, that we can best form an idea of the artist's intention. This is a fine piece of work and worthy of the occasion. The semicircular lunettes are treated with a figure at each side, in most cases, and the intervening space (partially occupied by architectural detail) filled up with symbolic decoration. Thus, in the Annunciation, which forms the subject of one lunette, we have the announcing angel standing on the left of the compartment and the Virgin (a beautiful figure) on the right; other subjects, the "Expulsion from Paradise" for instance, are treated in a similar manner; the angel guarding the gate (a grand figure) on the left, Adam and Eve on the right. The posing of the figures is probably dictated by the nature of the subject and the feeling to be conveyed. Thus, while the angel and the Virgin in the first-named subject naturally face each other, or nearly so, in the Expulsion the guarding angel has his back to the two retreating figures on the other side. The Delphic Sibyl, one of the full-size cartoons (of which the small sketch is also exhibited), is almost inevitably based to some extent on Michel-angelo—one could hardly escape that; and the subsidiary genius appears as if his action had been suggested by that of the Bacchus in Titian's immortal painting; but it is none the worse for that. The sketch for the centre east window looks as if it would work out into a fine thing. It is very Blakian in conception; the lower portion is occupied by angels standing on spheres (would not these spheres have been better a little larger? they seem scarcely adequate bases for the figures); the middle portion by seated saints and elders of very broad design and dignified aspect; the upper portion consists of a tumultuous grouping of angels whose wings and raiment form a climax of rich colour. This is a stained glass design perfectly suited for a Renaissance church, in style and feeling, and yet suffused with a glow of colour characteristic of Mediæval glass. The proposed treatment of the clearstory windows, of which two drawings are shown, is also exceedingly satisfactory; these are grisaille windows filled with decorative design only, the centre portion with Renaissance scroll-work, the borders with interlaced patterns of a Byzantine type; this also is sufficiently in keeping with a Renaissance church, while better fitted for stained glass treatment than a border of orthodox Renaissance pattern would be. Taking this set of designs as a whole, they afford matter for pleasure and satisfaction for all who are interested in the noble national work of the decoration of St. Paul's Cathedral; they promise that something is to be achieved which will be both fine and interesting in itself and effective as a work of decoration; and if the result in the execution in mosaic is equal to what the drawings convey, both the artist and the public may be congratulated.

Among the designs for window-glass is Mr. Holiday's cartoon (51) for the lower part of the new west-window in St. Saviour's, Southwark; subject, "The Creation." This is a remarkable and unusual treatment, the subjects being divided into a series of square panels, and treated in a highly conventionalised form, specially suitable for stained glass. This design should be studied, for it is quite out of the usual run of modern stained glass design, and shows very well how subjects of great significance can be reduced to a symbolical and conventional form, so as to be perfectly intelligible and yet as far as possible removed from anything, in the nature of a picture. Mr. C. W. Whall exhibits two cartoons of finely designed figures of Eve and St. Michael for glass at St. Mary's, Stamford; the St. Michael perhaps a little too much suggests a man in armour rather than a celestial power. Rossetti's series of designs for glass representing the "Story of St. George" (6 to 11) are interesting but very curious in drawing. By Mr. Burne-Jones there are some cartoons of angels for stained-glass which are of special interest as studies of drapery, treated with the stiff monumental lines which are so suitable for glass. Mr. Selwyn Image's cartoons for domestic-glass representing "Brownies" (78, 79) are original in idea and in perfectly stained-glass style; the same may be said of Miss Newill's cartoon (34) of the subject of "The Babes in the Wood," also for domestic-glass. Mr. Ford Madox Brown exhibits a series of cartoons for glass for Durham (15-20) illustrating the story of St. Oswald, and a monochrome study for one of his Manchester wall paintings, "The Expulsion of the Danes from Manchester" (2), in which early Mediæval architecture of rather an imaginary type is cleverly used as the scenic setting.

Textiles are very largely represented, the most notable work being the large subject from a San Graal series, representing "Sir Galahad and the Holy Graal" (89), worked in arras tapestry from the design of Mr. Burne-Jones, by Messrs. Morris & Co. Here also, on principle, we should have had a list of the names of the workers; and it is matter for reflection to find that Mr. William Morris, who is part of the backbone of the Arts and Crafts Exhibition, and who has demonstrated so perseveringly in favour of the recognition of the artisan, nevertheless exhibits work executed by "& Co.", just like any of the trading stained-glass or furniture firms: so much for principle and practice. The design is treated, as far as the figures are concerned, as nearly as possible in one plane; on the right is a kind of section of the chamber in which the Holy Graal stands on an altar before adoring angels, and Sir Galahad kneels at the door; Sir Lancelot, we presume, his armour girt with Enid's pearl-sewn sleeve, kneels on the left at a distance, as unworthy to approach nearer. His stern and melancholy figure is the finest thing in the composition. There is a wealth of flowers in the foreground, treated in a sufficiently conventional manner and affording a quantity of beautiful detail and colour; the background is a gloomy wood, and on the left is a rather realistic

beach and shells, backed by very conventional waves which have not at all a happy effect. In fact, the balance between conventionalism and realism is hardly maintained at the same level throughout the design. The work is splendidly executed, but the treatment of the most important point of the subject, the angels and Holy Graal, is hardly impressive in a poetic sense, and one cannot help feeling a doubt whether the result is commensurate with the immense labour which must have been gone through to produce it. Among other textile work we may draw attention to a sumptuous carpet in the west room, designed by Mr. William Morris and worked by "& Co."; a cream-silk portière (162) executed by the Royal School of Art-Needlework (no designer's name); a set of dessert doilies (158-9) designed by Mr. Walter Crane (no worker's name) and representing "Flora's retinue," which are charming; a portière (166) designed by Mr. Aymer Vallance, and executed by the Misses B. Hugget, B. Savage, and B. Fisk, which is original both in design and in colour effect, the centre forms in white line, in the flowers, having a very sparkling effect; a piano-back (197) in embroidered satin, with flowers and leaves *appliqué*, designed by Mr. Reginald Hallward and executed by Miss Edith Bloxam, very rich in effect; and a curtain and vallance for a bed-hanging (200), worked by Miss Lily Yeats and Miss Ellen Wright from the design of Mr. William Morris, is a beautiful piece of work, diversified by a quotation from a charming little poem by the designer. There are other good pieces of textile work which we have not space to particularise. At one end of the north gallery are some good specimens of wall-papers by various designers, two fine ones designed by Mr. Lewis F. Day (233-4), and one rather curious and original design, "The Vine," a printed wall decoration in tinted lacquer (235), designed by Mr. Heywood Sumner and executed by Mr. W. Bottomley (Messrs. Jeffrey & Co.). This is a striking piece of work, but placed all round a room it would have rather too much the effect of cutting the wall into a series of vertical stripes.

In the central hall we notice among other things of interest Mr. H. Wilson's font and altar-cross for Welbeck Abbey, both good and original; a point in the cross is the form of the plan of the base, oval in its general proportion. We should have rather liked the cross better without the thin and rather fragile-looking tracery ornament surrounding the ends of the arms, which seems not quite in keeping with the solid character of the rest of the work. In the central hall also is a fine bronze memorial tablet to the memory of the late J. D. Sedding, by Mr. F. W. Pomeroy, two draped figures in relief supporting a tablet with a low-relief portrait of the late architect on it, which has the merit of being a very good likeness, while the general composition of the whole is very harmonious in line. Another very interesting exhibit in the central hall is a stand with two or three of Sir F. Leighton's models made to assist in the composition of his pictures, including a complete sculpture sketch, as it may be called, for the Perseus and Andromeda.

Among interesting works which come under no special class we may draw attention to the drawing by Mr. Walter Crane of a design for a shield presented by the *Daily Chronicle* to the London Schools Swimming Association (38); the shield, of a very graceful external outline, is bordered with aquatic emblems, and in the field in the centre are two youths swimming, who appear, by the way, to be swimming "side-stroke" on their faces, but that is a detail which does not directly concern the artistic effect of the work. The painted designs for two fans (215-6), by Miss Mary Sargent Florence, are exceptionally good in design, and show a fine feeling for colour.

The south room is mainly devoted to books, binding and printing, and studies for book illustrations, many of which latter, by well-known artists, are of much interest. Mr. Cobden Sanderson exhibits a case of books (414) "bound by the Doves bindery," "to wit, designed by T. J. Cobden Sanderson, printed by Charles M'Leish, forwarded by Charles Wilkinson, sewn by Bessie Hooley, clasps by Douglas B. Cockerell." This is a conscientious carrying out of the principle of the exhibition. Many of the bindings are beautiful, but we do not know that any are better than the one in the next case (415), of "Elizabethan Lyrics," designed and tooled by Miss Irene Nicholls. However, there is scarcely a binding in these two cases which is not good of its kind. The three cases of books "printed at the Kelmscott Press" suggest a question which other things in the exhibition also suggest—whether it is not possible to go too far, and to defeat the real ends of work, in the too ardent striving to be "artistic." Literature, for example, is literature, not design, and the printing of books with the type and borders and initials all arranged to produce an artistic result to the eye has somewhat the effect of putting the ornamental element before the literary. For example, we find Tennyson's "Maud" printed in capitals and with the lines, as printers say, "run on," *i.e.*, not divided obviously into lines, but looking to the eye like prose. This is an utter mistake; no great poet would ever want his work printed so; the literary form should be clear to the eye as well as to the ear. This is one example of a tendency to excess in the endeavour after artistic form.

We may add that a feature in the exhibition is the illustration of the operations of printing, and of the making of blocks for wall-paper, carried on by artisans in the south and north rooms, so that the processes can be studied in operation. In regard to the wall-paper printing this is of considerable interest, and is evidently found to be so by visitors.

We congratulate the Arts and Crafts Society on a very varied and interesting exhibition.

NOTES.

IT is interesting to architects to find that a debated question as to the date of important sculptures may have to be tried in an architectural court. Such appears to be the case with the remarkable works of art found at Lycosura, and recently, in part, published by Mr. Kabbadias. They have enjoyed a double prestige, as the first and only works we possess from the hand of the great sculptor, Damophon, of the fourth century, B.C., and as echoes in stone of the style of ancient elaborate *xoana*. This last prestige they will retain, but it seems that on architectural grounds we shall have to attribute them, not to the fourth, but to the second or first century, B.C., to late Hellenistic or Roman times, and that hence Damophon, whom Pausanias distinctly states to have been their sculptor, must follow suit. At this last expedition of the German School to Peloponnesus, Lycosura was visited, and the masonry of the temple carefully examined. The temple consists, it will be remembered, of a cella with pronaos, the cella containing the basis of the great cultus group, which is still *in situ*—the statues have been removed to Athens. This basis is of limestone, of exactly the same sort as that which forms the lower portion of the cella walls. The upper portion was of brick. The columns and parastades of the pronaos and the architrave and *sima* of the whole building are of coarse white marble, the same material as the sculptures; the material came apparently from Doliana, near Tegea. The general style of the work and the character of the ornament employed are Roman throughout, and the basis of the statues, as well as the rest of the masonry, show uniformly the late ⌐-shaped clamp. Everything seems to point to their dating from the same period. An attempt has been made to save the fourth-century date of the sculptures, and of Damophon, by supposing that the sculptures belonged to an earlier structure, and that the temple was rebuilt. Of any such early structure there is not the smallest trace, if it existed; to have perished so completely it must have been in superstructure entirely of brick and wood: this, considering the elaborate character and marble material of Damophon's statues that were to be housed in it, is most improbable. It is satisfactory to find that some critics who have examined the original marbles at Athens have always inclined to a Roman date.

ONE of the most practical steps towards the solution of the coal difficulty is the endeavour which is being made by the Mayor of Sheffield to bring the disputants together. But for the serious character of the crisis, their present attitude would be almost laughable. The coalowners in conference issue a manifesto intimating their willingness to meet the men with a view of discussing "the proposed reduction"; adding that they are desirous not to raise false hopes by meeting the men upon any other basis. The Federation formally reply that they are not willing to meet the owners on this ground, "so that no false hopes may be held out." As we are now in the tenth week of the struggle, it might well be supposed that both sides are anxious to come to terms, and ready to welcome any suggestion which may lead to an interchange of views. The first step taken by the Mayor of Sheffield was to convene a meeting of the Mayors of some of the towns in the districts principally affected, at which they resolved that a deputation of representatives of both sides be invited to meet them at Sheffield on Monday next, with a view of finding and agreeing upon the mode of settling the dispute. It is added that the municipal representatives will be prepared to lay certain suggestions before the conference in the hope of bringing about a settlement. Such a conference as this both coalowners and miners can attend, without retreating in any degree from the position they have seen fit to take up; and it is sincerely to be hoped that the meeting may lead to good results. Although a good many more men have resumed work this week, the output is, of course, very far short of the requirements of the country; and the relief afforded is, at present, chiefly local. All will join in wishing the Mayor of Sheffield and his colleagues every success.

SIR COURTENAY BOYLE, speaking before the Associated Chambers of Commerce at Plymouth last week, gave it as his opinion that bodies such as those he was then addressing could do much more for British trade interests than the Board of Trade. He maintained that if the wisest men amongst them were selected to form a State department, that State department would not be so useful as the Chambers of Commerce. The fact is that the Chambers and the Board of Trade are equally indispensable to the trade of this country, and should work hand in hand. The railway rates question furnishes an instance in which the public are indebted to both these bodies, the traders being, at the present time, in a far better position than they would have occupied but for their persistent action. More still remains to be done before this question is finally settled, and several resolutions bearing upon it were introduced at the Plymouth conference. These included resolutions approving of the creation of a tribunal for determining what is or what is not a reasonable rate; and also the formation of public trusts for the acquisition of waterways, with power of compulsory purchase of canals now under the control of railway companies. With regard to the former point, the President of the Associated Chambers described the existing Railway Commission as being all that a tribunal ought not to be—cumbrous, costly, and limited in jurisdiction. There is

every probability that Mr. Shaw Lefevre's Committee will recommend some reform in this connexion, the demand for it being so widespread and the necessity so apparent. The question of arbitration and conciliation boards naturally entered largely into the deliberations of the Associated Chambers, resulting in the adoption of a resolution affirming the desirability of investing the Board of Trade with such authority as may be necessary to settle labour disputes by conciliatory means. This is essentially a matter in which the Chambers and the Board of Trade must co-operate. No one interested in the commerce of this nation, of whatever shade of politics, can fail to regret the "shelving" to which this important matter has been doomed in the House of Commons. There is at least a possibility that the coal dispute would never have grown to its present proportions had the Bills which have been introduced on the subject been debated, amended where necessary, and borne such practical fruit as the promoters designed.

DR. MACLEAN WILSON'S Report to the Local Government Board on the Sanitary Condition of the Whitby Rural Sanitary District, dated August 9, refers especially to the arrangements for the discharge of the duties of Medical Officer of Health, but gives some details as to the sanitary condition of the villages on the coast which ought to be of interest to those who like the neighbourhood of Robin Hood Bay as a seaside resort. The following information (amid many other details) is gleaned from the Report. In the seaside villages the houses are generally built on a steep slope, and very many of them have the earth heaped up on their back walls even as high as the eaves. Sewage is disposed of in the district by running it into the nearest watercourse. Any sewers that have been constructed are short lengths meant only to carry the sewage past houses. In many cases these sewers discharge by the roadside, where pools of putrefying filth are formed in summer. In many of the farmyards there are good examples of the old farmyard midden, where farm manure, ashes, house refuse, and slop water are all thrown into a hollow in the soil, without foundation or covering, and without drainage. A large number of the cottages, especially those in the seaside villages, have no privy accommodation. The ordinary form of these structures is that of the pail-closet in the seaside villages and of the old midden-privy inland. In the pail-closets no earth is used, but all the house refuse is emptied into them, and as many of the cottagers have no gardens, and the Authority have not undertaken the removal of refuse in any part of their district, the disposal of the contents of these closet pails is a matter sometimes of difficulty. The closets are frequently of wood, with wooden or earthen floors, and the privy-middens of dry stone, large, deep, and uncovered, sometimes without retaining walls, and always with the bare soil underneath. There are innumerable good springs of water all over the district, issuing from between the beds of sandstone and shale, so that there is not a single village which need be without a good supply. In spite of this, very few of the villages are well supplied. Many are dependent on pump-wells belonging to farm-houses, or on roadside dip-wells, sometimes at a great distance from the houses. Instances are not uncommon where all drinking and cooking water has to be fetched a distance of a quarter of a mile. Pollution of the streams is common all over the district. The Authority, when laying down any new sewer, seems quite content if able to discharge the sewage into the nearest stream. The improvements carried out are never of a comprehensive character, and relate only to the removal of nuisances. For example, in Robin Hood Bay the sewers have in many instances been relaid, but they have all been carried directly into the beck, which remains as foul as ever, although many complaints have been made as to its state. There, too, the removal of house refuse has been attended to so far as to provide public middens (of bad construction) and shoots over the cliff. But the middens themselves, and the shoots as well, create nuisances which are frequently complained of. Evidence of this dilatory and inefficient action of the Sanitary Authority is also shown by a comparison of the recommendations of one of the Board's Inspectors in 1885 (*see* the Appendix) with the results achieved at present. Very few of these recommendations have been attended to, and they might be repeated almost word for word with reference to the present state of the district.

THE "Journal" of the Franklin Institute for September contains a useful paper upon the subject of artesian wells, in which the author, after reciting the trite saying that the two principal questions to consider in artesian water are the quality and the quantity, states, first, as regards the quality, there can be no doubt that water which filters through from 200 to 500 ft. of rocky strata is free from all deleterious organic matter. Those stratified rocks which are highly jointed, fissured, and porous, furnish many easy channels for the passage of rain-water to strata situated at great depths, while beds of clay, clay slates, fine-grained sandstones, quartzites, and compact mica schists make very good confining beds. The author combats the popular error which asserts that a well is of little interest unless it be a deep one, and that the deepest ones furnish the most water. Shallow wells often yield enormous quantities of water. The object of drilling a well being to obtain water, it is a useless expense to drill deeper when an abundant supply is reached at a moderate depth. The author next inquires what kind of rocks yield hard water and what kind soft water. Whether a water be hard or soft depends mainly upon the composition of the soil and rocks through which it filters. Water that passes through calcareous or magnesium rocks of great thickness will probably be hard, while water that passes through rocks composed of silica, alumina, iron, potash, or soda will probably be soft. The great deposits of limestone, marble, gypsum and other calcareous rocks, as well as the magnesian rocks, such as dolomite, chlorite, and talcose schists would then yield hard water. This is, in the main, true, although there are some exceptions which local conditions modify. Some sandstones will yield soft water, while other sandstones furnish hard water; it depends mainly upon the cement which binds the grains together. If the cementing material be carbonate of lime or sulphate of lime, the water will probably be hard, especially if the well be of great depth and the water be long in contact with the rocks. If, on the other hand, the cementing materials be felspar, such as orthoclase or albite (not labradorite) or even gelatinous silica, the water will probably be soft.

IN the Surveyor's Annual Report to the Vestry of the Parish of St. Luke we notice that special attention has been paid to the cleansing, refilling, and disinfecting of the street gullies. One water-van has been exclusively employed in refilling the gullies after emptying them and flushing them, together with the surface ventilators, with a strong solution of carbolic acid and water. The whole of the gullies and surface ventilators throughout the parish are by this arrangement flushed and disinfected on every alternate day. An important item in the Report is a long paragraph dealing with the question of disposal of refuse, especially in regard to wharf premises. The Surveyor says:—

"It is not only the house refuse that has to be considered, for trade refuse, street sweepings, and slop are equally difficult of treatment, and if not properly dealt with are quite as likely to prove as serious a danger to the public health as the much talked-of dustbin. I know that some of the trade refuse which has to be dealt with in this parish is of such a nature that it decomposes and throws off a most sickening effluvium in less than twenty-four hours, and I have seen trade refuse brought on to the wharf that has fired whatever it came in contact with of a combustible nature. I may mention it is not unusual to receive application from firms to send a van at once to remove a load of trade refuse. This, I think, shows beyond a doubt the real necessity for a more speedy and also efficacious method of dealing with the whole question of disposal.

In seeking for and selecting the means by which it is hoped to obtain the desired result, I would suggest that the system and data only which have been proved in actual practice and can be still demonstrated, should be considered; no fancy or intricate method which has not stood the test satisfactorily should be entertained by any public authority, and experimenting should be left to the scientist, or the result may prove both a loss and disappointment.

The old outlet by means of carting or barging to shoot is in many instances entirely closed, and in others the shoots still available are situate at too great a distance to be of service. . . .

Many public bodies are endeavouring to find a solution of the difficulty by erecting destructors. If this is the method to be adopted in future (and such appears to be the general opinion), there are a few points worthy of careful consideration before deciding on any particular form of furnace, *i.e.*:—

a. That sufficient means are provided at the beginning to entirely prevent the possibility of accumulation.

b. That complete combustion takes place in the furnace by the refuse not being hurried through; and this, I would point out to the vestry, is the weakness of, and my objection to, the system of piece or load work.

c. That the fumes previously to entering the shaft are rendered innocuous, and that the whole work is carried on without nuisance.

d. That the means of procuring such a result are not too costly.

The furnace most likely to accomplish this will, in my opinion, be found to be one of simple construction, requiring no skilled labour to work it, and at the same time causing as little wear and tear as may be consistent with efficient working. There are several kinds in the market, some of which I have seen at work. Some of the recent inventions are a kind of mechanical stoker and fireman combined, and it is said that they do away with the large percentage of the labour required to work the destructor, as the refuse is fed into the furnace mechanically and the clinker drawn out by the same method.

Those members of the vestry who have seen and are acquainted with destructors are aware of the intense heat produced in the cells, and it is very doubtful whether any mechanical contrivance can stand in the face of such heat; it is also very doubtful whether these mechanical iron men will be able to manipulate refuse as desired.

In some instances forced draught is applied by the use of steam blast and differently-arranged internal flues. By this last arrangement the steam raised by the combustion of the refuse is used to further hasten combustion by increased temperature. I need hardly remind the vestry that this is a very serious item of expense in the form of greatly increased wear and tear of the whole structure, and also a still greater disadvantage likely to happen at intervals, *i.e.*, the frequent cessation from burning for long periods for the purpose of executing the necessary repairs; further, the steam, which is capable of being usefully and profitably utilised, is employed to increase the strain, which is already sufficient on the buildings, which have been erected at considerable cost, without, in my opinion, producing a correspondlng benefit. For the above reasons I suggest these are matters which should receive careful consideration before being adopted."

We quote these remarks by the Surveyor (Mr. Meaby), as they are of general application, and may be useful as suggestions for the consideration of other public bodies which are contemplating the use of destructors.

WE regret to hear of the death, in his eighty-third year, of Mr. William Rendle, F.R.C.S.E., for whom it may justly be claimed that he was the historian of Southwark. For many years he served as the Medical Officer of St. George's, and his residence there enabled him to supplement his extensive researches amongst written records with investigation on the spot, an addition to their inquiries which present-day day topographers are somewhat prone to neglect. Mr. Rendle frequently contributed to *Notes and Queries*, and wrote two standard works: "Old Southwark and its People," 1878, and ten years later, in conjunction with Mr. Philip Norman, F.S.A., who furnished

the illustrations, "The Inns of Old Southwark." We reviewed the latter volume on November 3, 1888.

FROM the report of Mr. Norrington, the Surveyor to the Fulham Vestry, it seems that the system of the vestry doing their own work in road-making and repaving, instead of employing outside contractors, has proved a great success financially. The work of paving a certain section of the Fulham-road and Rylston-road with deal blocks has been done at a cost of 1,791*l.* 1s. 9d. below the lowest outside tenders, and 437*l.* 1s. 9d. below the Surveyor's estimate. The whole cost has been 5,388*l.* 8s. 3d. . In another case the actual cost has been 4,299*l.* 15s. 5d.; Surveyor's estimate, 4,640*l.* If the work has been well done, this is strong evidence in favour of vestries acting as their own contractors.

THE thirty-seventh report of the vestry of the parish of Chelsea, while showing that the practical and sanitary affairs of the parish are very well looked after, does not present much for special comment. We notice a reference to an experiment in paving part of King's-road, near the Police-station, with blocks described as being "made from specially selected vitrified material, impervious to weather and moisture, and fitted with square wooden plugs on the surface." Complaint was made of the noise caused by this paving, but having undertaken to give it a trial for a period of eighteen months, the vestry were reluctant to remove the blocks, and accordingly took no action with regard to the complaint. In regard to another point, the proposal to open a new communication by the removal of a wall separating Langton-street from Victoria-grove, the vestry set a good example in respecting the memorial of the residents in Victoria-grove, pointing out that their residences in that place had been taken owing to its quietness, which by the removal of that wall and opening of the thoroughfare would be destroyed. The invasion of neighbourhoods which have enjoyed a long immunity from the noise of traffic is a serious grievance which is often entirely overlooked in the prosecution of what are called, but are not always, "public improvements," and the vestry showed a wise spirit in respecting the rights of the minority, too often very little respected in these days.

WE were among those who experienced and expressed some disappointment in the design for the Shaftesbury Fountain, mainly on architectural grounds; and we are not therefore speaking from the point of view of bigoted admirers of Mr. Gilbert's work when we give expression to the disgust and contempt which all artists must feel at the letters on this subject which have been allowed to appear in the *Times* during the past week. Mr. J. Russell Endean, whose claims to express any criticism on a work of art we have yet to learn, informs the public on his own *ex cathedrâ* authority that the fountain is one of the ugliest erections ever put up; an old maid writes to the *Times* to express her indignation that Lord Shaftesbury should have been commemorated by a fountain with a nude figure on the top; and a landscape gardener is allowed the use of the same paper to inform one of the first artists of the day that he "has no idea of the dignity and simplicity which mark all pure design," especially, no doubt, the designs of landscape gardeners. That some people should be silly and presumptuous enough to write such letters is natural enough; few English people know much about art; but it is really rather astonishing that the *Times* should not know better than to print them. With some drawbacks in the architectural portion of the design, we have for the first time got an object of this kind in a public place in London which is really an artist's work, and which foreign artists visiting London would think it worth while to see; and all the artist gets for it is to be subject to public ridicule at the hands of persons who have no sort of right to speak on the subject of art at all. But Mr. Gilbert has sinned, no doubt, in doing something original and unlike the ordinary commonplace of modern London monumental erections. Had he erected a square pedestal with a statue of Lord Shaftesbury in trousers and frock-coat, no doubt Mr. Russell Endean and his like would have found their pure tastes amply satisfied.

LETTER FROM PARIS.

THANKS to the intelligent support given by the Directeur des Beaux-Arts, an eminent sculptor, M. Cros, making use of the furnaces and materials of the national manufacture of Sèvres, has just completed a large fountain in *pâtes de verre*, coloured, designed and modelled by himself. The fountain, which will be on view for a few days at the manufactory at Sèvres, is more than two mètres high and composed of fourteen pieces. In the upper portion of the design appears a blue sky and the sun in a chariot drawn by white horses. Below is a female torso, finely modelled, emerging from a white drapery, and personifying snow; other allegorical figures are added. In the lower portion is a figure in relief of a young man holding on his shoulder an urn, whence the water flows on to a flowery field, in which is a bas-relief figure of a woman reclining under the trees. The upper part of the base is formed by a wide band of leaves and fruits, with a mask head in the centre, above which is a decoration composed of seaweed and fish; below is a basin, apparently carried by a colossal crab. It is expected that this curious piece of work is to be seen at the next Salon.

The arrival of the Russian naval officers in Paris is at present the principal interest of the Paris municipality, which is preparing an imposing reception in their honour. Besides the fêtes at the Hôtel de Ville, each Russian officer is to be presented with a copy in bronze of the "Paix armée" of M. Coutan. This reproduction of the statue which decorates the "Place d'Anvers" will be accompanied by a reduction in bronze of one of the most graceful productions of the late M. Chapu, "Le Souvenir," the seated figure of a woman which decorates the monument of the Comtesse d'Agôut. The "Union des Sociétés de Tir" of France also intends to offer to Admiral Avellan a copy of the "Gloria Victis" of M. Mercié. Lastly, M. Bouvard, the Inspecteur-Général of Architecture to the Municipality, who has been commissioned to evolve, if possible, something new in the way of an artistic celebration, has appealed to all the young artists who are desirous of an opportunity of distinguishing themselves; and the scheme of three among these has been accepted. MM. Ferdinand Dubois (sculptor), Paul Froment (architect), and Émile Coudère (decorator), have suggested erecting on the Place de l'Hôtel de Ville, in front of the State entrance, an immense vessel carrying allegorical figures: "The City of Paris," seated, receiving "Russia" as a young girl protected by "the Genius of Peace." At the stern of the ship the helm is to be held by a figure symbolising "Labour." We give the description, without any comment, of this curious project, the actual carrying out of which is a question of the money being voted. The intended receptions may give a certain point and meaning to these rather commonplace efforts of official taste, the product of a somewhat exaggerated enthusiasm which it is said is even to go the length of giving the name of "Cronstadt" to the Avenue du Bois de Boulogne.

To come to works of a more serious and useful nature, we may note that the Préfecture of the Seine has ordered an inquiry into the scheme for bringing the water of the Loing and Lunain to Paris. The intention of the scheme is to convey a considerable addition of water to the reservoir at Montsouris, which already receives the waters of the Varne. These sources of water, which are already the property of the Municipality, represent a daily yield of 50,000 cubic mètres of water, and are intended to supply the districts on the left bank. Twenty-five million francs will be required to carry out this important operation, of the detailed works for which we may have to speak later on. In connexion with the subject, meanwhile, we may mention that there arises a second proposal for renaming the Avenue du Bois de Boulogne, long known as L'Avenue de l'Impératrice. If the proposed name of "Avenue de Cronstadt" would preserve the memory of the cordial reception given to the French fleet two years ago, it is argued on the other hand that the recollection of the services rendered for many years by an able administrator would equally justify the name of "Alphand," which many members of the City Council wish to give to it. But why not leave it its actual name, which has the merit at all events of clearly indicating its topographical situation? If there is a wish, and a very just one, to commemorate Alphand in the name of a new street, there are plenty, in the quarters more especially connected with his work, among which to choose. It must be added that the constant fancy of the municipal authorities for renaming streets — often from merely political motives—is becoming exceedingly inconvenient to the inhabitants of Paris.*

In a few days the classes of the École des Beaux-Arts will reopen; and at the same time will be opened the competitions for the Armand legacy and the Chenavard donation. This last act of liberality on the part of Madame Chenavard is intended to give a premium every year, at the commencement of the period of study, to a student in painting, sculpture, architecture, and engraving, who may be prevented by want of means from completing his term of studies. The Armand legacy was left with much the same object.

Artistic news is rather scarce in Paris at this holiday season. We may remark that the works going on at the Palais de l'Elysée were not only for the repair of the structure, much ravaged by time, but also for the interior decoration of the reception rooms. The "Salle de Bal" especially, built not many years ago, had been decorated in an altogether summary and provisional manner; the tempera paintings savoured too much of theatre decoration, and offered a curious contrast to the elegant decorations of the ancient rooms of the Palace. As the architect in charge of the Palace has only a very limited sum for annual expenditure on it, he could only effect the transformation of the room by degrees, beginning with the ceiling, which will be adorned with three large allegorical paintings; the other decorations will be executed in turn.

We have to record with great regret the death of M. Marie Auguste Flameng, a painter of much talent, who has died at Paris at the age of fifty. M. Flameng was born at Yony-aux-Arches, near Metz. He came to Paris as a young man to study painting in the ateliers of Dubufe and Puvis de Chavannes. His taste led him in the direction of landscape, and above all to coast scenery. One of his best pictures, "Bâteau de Pêche à Dieppe," was bought by the State in 1881, and is at the Luxembourg. Since 1875 he regularly exhibited at the Salon. Among his works that have been seen there may be mentioned "Un Torride Mer à Saint Vaast"; "Le Varech"; "La Sortie d'un Trois-Mâts au Havre"; "La Tamise à Londres"; "Sur la Grève"; &c. This year he sent to the Salon two vigorous sea-pieces, "Marée Basse" and "La Garonne à Bordeaux." He had obtained a Third Medal in 1881, a Second Medal in 1888, and a Silver Medal at the 1889 Exhibition.

We have to record also the death of M. Louis Eugène Alexis Fanost, architect, who has died at Paris at the age of eighty-eight. M. Fanost was born at Valence (Drôme), and studied in the ateliers of Vaudoyer and Lebas. He was admitted to the École des Beaux-Arts in 1828. He then entered as "Inspecteur" the ateljer of M. Renié (at that time architect to the École Polytechnique), and in 1845 was admitted a member of the Société Centrale, of which he was for nearly half a century a devoted adherent. A member of numerous committees, especially that which was charged with the issue of the second edition of the "Manuel des Lois du Bâtiment," M. Fanost took up zealously all work entrusted to him, and put at the service of his colleagues a clear judgment and a remarkable degree of practical knowledge.

A.A. LYRIC CLUB.—We are asked to mention that the opening concert of the season 1893-94 of this club will be held at Coleman's Hotel, Henrietta-street, Covent Garden, W.C., on Friday, Oct. 20, at 8 p.m., when the programme will be arranged by the Committee.

* This of course is quite a different matter from the changes of names which are being introduced in London, the sole object of which is to get rid of duplicate names.—ED.

THE EAST RIDING ANTIQUARIAN SOCIETY.

This society held its first annual meeting at Beverley on September 25 and 26. On the first day the members assembled in the Minster church shortly after noon, and were placed in the competent hands of Mr. John Bilson, F.R.I.B.A., for instruction in the gradual development of this noble pile of buildings, and for detailed description of its many beauties. The vicar subsequently exhibited the plate and books pertaining to the church, and gave an interesting account of their more remarkable features. The singularly well-defined vestments of an ecclesiastical effigy in the north transept attracted much attention. The stole, maniple, and other parts of the eucharistic vestments are represented as embroidered with a variety of coats-of-arms. Over the chasuble is worn the fur hood or amyss of a canon. It dates from about the middle of the fourteenth century, but has not yet been identified. Mr. W. H. St. John Hope (Secretary of the Society of Antiquaries) gave a good account of this effigy. Luncheon was taken by most of the party at the Beverley Arms, when the Bishop of Beverley took the chair, and spoke most favourably of the work already achieved by this young society. At three o'clock the business meeting of the society was held in the Town Hall. Rev. Dr. Cox, F.S.A., was re-elected president. Sir Tatton Sykes and four other county gentlemen were added to the list of vice-presidents. The old council was re-elected, and strengthened by the addition of the names of Mr. John Bilson and Dr. Stephenson. The Society also proceeded to elect Sir John Evans, K.C.B., Mr. St. John Hope, Rev. Canon Raine, and Rev. Canon Greenwell as honorary members. The first volume of the Transactions was issued at the meeting to the subscribers; it is a well-printed and well-illustrated volume of upwards of 100 pages. Rev. Dr. Cox then delivered an address on the Gilbertine Statutes, and the life of St. Gilbert, of Sempringham, the founder of the Order. He pointed out that the Gilbertine houses were really establishments of nuns and serving sisters after the Cistercian rule, with a community of chaplains or canons, after the Austin rule, attached to them, who said mass and other offices for the sisters, and looked after the external affairs of the priory. But the nuns kept the money and presided over the kitchen and cellar, which were common to the two sexes. He proceeded to describe in detail the remarkable arrangements for keeping the two sexes absolutely separate, both in church and in procession, and for supplying food, &c., through "turning windows." Mr. Wildridge, Hon. Sec., next gave an account of the early charters of Beverley, which were exhibited by the deputy Town Clerk, Mr. Mills. These charters form a remarkably fine collection, and include a grant by Archbishop Thurston, *circa* 1115, to the men of Beverley of all the liberties they of York have; this grant shows that a branch of the Hanseatic League was established here soon after the Conquest. This grant was confirmed by St. William, Archbishop of York. There are also original royal charters and confirmations of charters, bearing the seals of Stephen, Henry II., Henry III., Edward I. and III., Richard II., Henry IV., V., VI., and VIII., Philip and Mary, Elizabeth, Charles I. and II., and James II.

At 6.30 there was a largely-attended dinner at the Beverley Arms, with Mr. Bethell in the chair and the Mayor of Beverley in the vice-chair. After a brief toast list, the party adjourned to the Town Hall, where a conversazione of the members and their friends (upwards of 100) were present at the invitation of the President (Rev. Dr. Cox). Several interesting papers were read during the evening. Mr. J. R. Boyle, F.S.A., read a paper on the "Pre-Norman History of Beverley," which cleverly and concisely summed up the earlier records and myths. Miss Mortimer, on behalf of her father, Mr. J. R. Mortimer, the well-known Wold barrow explorer, read a paper on a barrow recently opened on Sir Tatton Sykes's property. Mr. W. H. St. John Hope described the various Corporation insignia, kindly lent by the Mayor, including two silver chains of sixteenth-century date, formerly worn by the waits, or town minstrels. The alternate figures of a beaver and an eagle he explained as referring to the emblem of the town of Beverley, and the emblem of St. John, to whom the Minster church is dedicated. His description of the gradual evolution in shape of civic maces, as illustrated by the two good examples pertaining to the town, was most ably done. The snuff-box, of 1709, presented to the Corporation by John Jackson, who had been mace-bearer for the long period of fifty-six years, was also described, as well as some embroidered cushions for the Aldermen's seats of the year 1690.

Mr. Arthur Leach, F.S.A., then gave a valuable address on the position of Beverley Minster as a great collegiate church. It was chiefly based on the early Chapter Act book of the Minster, dating from 1269 to 1340, now in the possession of the Society of Antiquaries. The great power possessed by the collegiate canons is strikingly exemplified, as, for instance, in the Prior of the Dominicans (of Beverley) begging pardon, on his knees, before the Chapter for having heard the confession of a townsman. The volume also throws much light on the fabric. From the numerous commissions to collectors for the "new work," which begin to be entered in 1309, and become frequent during the next twenty-five years, Mr. Leach concluded that this was the time of the rebuilding of the nave. The Grammar School and its masters are frequently mentioned between 1304 and 1340. Seven choristers were educated free, but the other scholars paid fees. Dr. Stephenson then gave a comprehensive description of the varied collection of relics that were found in the streets of Beverley, a few years ago, during the deep drainage excavations. They are chiefly of fourteenth and fifteenth century date. So keen was the interest of the archæologists that discussions were continued till after eleven o'clock.

At ten the next morning the members met near the railway station for a brief perambulation of the town, noticing *en route* its chief old features, such as the old houses in Butchers'-row, Toll Gavel, the Market Cross, and the old brick gateway known as the North Bar. St. Mary's church was well described by Dr. Stephenson, Mr. R. C. Hope, F.S.A., adding some remarks on the "Minstrel's Pillar," and Rev. Canon Quirk exhibiting the plate, books, and other objects of interest preserved in the church. After luncheon the members proceeded in wagonettes to Walton Priory, seven miles distant on the Driffield-road. This was the great feature of the meeting. During the preceding week a large number of men had been at work excavating the site of the old conventual church of this Priory, under the direction of the Rev. Dr. Cox and Mr. W. H. St. John Hope. Watton was the largest and most wealthy of the Gilbertine priories, the only religious order established by an Englishman. Up to the present time there has been no investigation of the sites of any of these houses. At the time of the Dissolution, the prior's lodgings and part of the infirmary close were preserved as a residence, and have been uninterruptedly occupied. This block of buildings, though retaining some older work, is mainly of fifteenth-century date. A large oriel window of about 1470 is the most attractive feature. The remains of the church and of the greater part of the conventual buildings were entirely buried in grassy mounds until the last few days. The process of uncovering has revealed the outlines of a fine church of remarkable plan. Its length is 206 ft., and its width, exclusive of the transepts, 51 ft. A longitudinal wall runs from east to west, dividing the whole church into two parts. The south or canons' side is 19 ft. 3 in. wide, whilst the north or nuns' side has a width of 26 ft. 9 in. This wall of partition, about 5 ft. thick, breaks off a short distance from the east end of the choir for an archway, which would be used for processional and exceptional purposes, and which would doubtless usually be closed by doors or a screen. A little further to the west, in the resumed wall, is the base of a curious window, 3 ft. 6 in. from the ground, and having an opening of 21 in. Within this window opening has evidently been one of the turning-tables described in the statutes. This one would be used for transmitting to the care of the nuns the chalice after mass at the canons' altar. In a small chapel of the north transept was a beautifully-carved canopied tomb, of fourteenth-century work, the carving of which may be favourably compared even with the famed work of the Percy tomb in Beverley Minster. A large number of the broken fragments have been recovered, sufficient to show that it commemorated a knight, parts of whose effigy remain, together with a shield bearing a bend, which may indicate the Scrope family. The tomb itself had been rifled. The south transept has not yet been thoroughly explored, as the work is very tedious, owing to the great amount of chalk rubble, of which the core of the walls was composed, and which covers the whole area to a depth of several feet; but it seems probable that there was a south-west tower in this position. There is no western door to the nave. From the remains of pillar, stones, and capitals, there seems no doubt that an arcade originally was placed on the partition wall at some considerable height. The great cloister of the nuns was on the south side of the church, and had an area of 100 ft. square. The smaller cloister of the canons was probably to the west of this, but has not yet been investigated. It is proposed to resume the work of excavation next year. The great church was originally begun to be built about 1150, and was much damaged by fire seventeen years later. The foundations of the first Norman church are easily discernible at the east end; they now bear two or three feet of the additional base work and great buttresses of the later Transitional church. The walls throughout are about 6 ft. thick, and have been faced with an excellent strong stone. This stone is full of ammonite, and has marked Whitby characteristics, and is quite unlike the rest of the church building stone of Holderness. The stone used at Watton probably came by sea and thence up the Hull and by a smaller water-course direct to the priory site. Mr. W. H. St. John Hope much interested the large number of visitors by his plain and graphic description of the buildings, and Dr. Cox added a few words. The East Riding Antiquarian Society is to be warmly congratulated on having begun a work of such exceptional interest and value.

ECCLESIASTICAL ART AT THE CHURCH CONGRESS.

One may consider that this annual exhibition has now settled down to its final form, and that the difference in its general appearance from year to year will be due only to the building in which it is housed. This year the latter forms a part of Bingley Hall, in which the Congress is being held, and is fairly well suited for its purpose. The philanthropic depôts and trade exhibits (with exceptions) occupy the floor, and the loan collection of painted glass-work the gallery. Lecterns, chalices, and church furniture are all there, made according to the most approved patterns, but it must be confessed that they lack the life-giving touch of the artist, who while in touch with tradition, thinks the subject out afresh, and gives it individual expression. They are traditional forms that no longer advance, but have betaken themselves to revolution round a fixed centre. More serious objection may be made to the too naturalistic treatment of certain forms here and there, as in the feathers of an oak eagle-lectern; while the well-fed look of some of the sculpture has destroyed the spirituality of face or or—as in the case of a Madonna—the lines of grief expressive of a mother's suffering. A similar remark may be made with regard to several of the figures of the painted glass, where the aim seems to have been to portray pretty girls with flowing hair, but destitute of religious dignity or calm. Were the promoters of the exhibition to ascertain the most notable works of ecclesiastical art and architecture that have been executed during the year, and obtain the loan of the one, and drawings or photographs of the other, the exhibition would become an exceedingly interesting one, and would, moreover, afford valuable evidence of the lines on which the art is moving. It would never then, let us hope, become stereotyped.

In connexion with the present exhibition, it is interesting to note that the revival of ecclesiastical metal work originated in Birmingham. A. W. Pugin was at that time Professor of Architecture at Oscott College, in the neighbourhood, and by a casual meeting in 1837 found in Mr. John Hardman, a button-maker of the town, an enthusiastic coadjutor. In 1845 the business was founded which to-day sends one of the largest and best contributions to the exhibition. Messrs. Elkington exhibit the communion-plate of Liverpool Cathedral; the ornament is elaborate and well executed, but the traceried arcading does not seem the most suitable treatment for *repoussé* silver. Messrs. Jones & Willis, Hart, Son, Peard & Co., Thomason & Co., and most of the local ecclesiastical metal-workers are represented. Of Church embroidery, the exhibit of the Decorative Needlework Society is conspicuous for work of a high-class, and, in fact, the exhibit is one of the best in the building. It contains, amongst other works, an altar frontal designed by Miss Mary Gemmell. The whole space of the frontal is well filled with conventionalised vine-scrolls in gold thread, embossed on a background of brocaded silk. Similar in general character is the altar frontal and super-frontal in the Loan Collection, designed by Mr. William Morris, for All Saints' Church, Wilden, and worked in

Japanese gold paper thread and in gold silk from the cocoon, but the vine scrolls are here fuller and bolder in treatment. The panel of a frontal worked by Mrs. Blagden, for St. Frideswide's Church, Poplar, is a marvel of technical skill in embroidery, but the total effect is rather hard. The Loan Collection also contains a selection of rubbings from some of the finest monumental brasses, lent by Mr. H. E. Franks.

Amongst the church plate is a silver-gilt chalice dated 1592, of unusual and refined outline. A delicately chased shield with surrounding wreath occupies one side of the bowl and an inscription runs round the lip, the rest of the bowl as well as the lower portion of the domical shaped paten is ornamented with close radial striæ. The base is circular. Another silver-gilt chalice dated 1613, and presented to Welland Church in 1735, is of elegant Renaissance design.

The silver-gilt communion cup and cover (A.D. 1676) of the Parish Church of Ashby-de-la-Zouch is a good example of a post-Restoration chalice, and is stated by Mr. Cripps in his "Old English Plate" to be of similar character to that used in Lambeth Palace Chapel, though more ornamented. The bowl has lost the conical shape of the Mediæval chalice, the sides being quite vertical. The bowl itself is plain, but round the lower two-thirds is attached a pierced and repoussé silver ornament. The top of the slightly-domed paten is treated in the same way, the design consisting of cherubs. Repoussé cherubs are also attached to the angles of the hexagonal base.

A skull-watch of silver gilt, engraved with the fall of Adam and Eve on one side and the emblems of the Passion on the other, is curious and interesting.

An exhibit of various gems is interesting in another way, but when they are mounted in the most entomologically correct forms of bees and dragon-flies they really depart very far from ecclesiastical or any other form of art, and become vulgar.

MUNICIPAL ENGINEERS AT LEICESTER.

Between eighty and ninety members of the Incorporated Association of Municipal and County Engineers spent two busy days at the Midland Counties District meeting held at Leicester on Friday and Saturday last. The main object of the visit was to inspect the works which the Leicester Corporation has carried out, at great cost, for saving the town from river floods, improving the ordinary sewerage, lifting the sewage up to and distributing it over a sewage farm, and saving the town from inundation by the storm-waters of its own area by conveying those waters, together with the sewage, to a free outfall into the river below the town. In addition to those works, three destructors were also inspected. Mr. E. G. Mawbey, the Borough Engineer, acted as the guide of his fellow members, for whom brakes were provided to convey them from place to place. On the first day luncheon and tea were provided and served in the overflow chamber of the storm outfall works by the contractors for those works, Messrs. S. & E. Bentley, and Mr. Thomas Philbrick, of Leicester. On the second day luncheon was provided and served upon the beam floor of the engine-room in the pumping station by Messrs. Gimson, the makers of the engines, and two of the four were at work during the luncheon, which was in no way disturbed by any noise or vibration. There was a formal reception at noon on Thursday, at the museum, by members of the Town Council. In the adjoining palæontological room a large amount of wall space was covered with maps of the town, showing successive proposals for culverts to carry off the town's storm waters to the river, sections of the new sewers, sections of the storm culverts, and cartoons showing the construction of the pumping engines and of the destructors. In the adjoining lecture-hall of the museum—a picture gallery—a meeting was held, Mr. J. T. Eayres, of West Bromwich, in the chair, at which Mr. Davis was re-elected as district secretary. Addresses of welcome were made by Messrs. Biggs and Wallesley. Mr. Biggs stated that the Corporation had to contend with great difficulties because the town was situated in a valley, and had a very sluggish river running through it. The town had undertaken the engineering works referred to, with the result that the death rate of the town, which used to be above the average for England and Wales, was now below it. At the close of the first days' tour the party returned to the museum and heard a paper by Mr. Mawbey describing what was to be shown in the two days. The order in which they were seen is unimportant; and it is essential to keep in view the separate character or the relation of the different works. The treatment of the river stands by itself. The storm drainage of a large watershed above the town inundated the lower parts of the town. To remedy this there was constructed a 500 ft. weir; and through the town the river bed was deepened and made straighter. Thus the approach of the storm waters was regulated, and their passage through the town was expedited. In connexion with the ordinary main sewerage, the party descended a flushing chamber by the side of the clock tower in the middle of the town. In this circular chamber they saw the sewage held up in one or two sewers, and the obstruction removed so as to flush a lower sewer. The party also inspected a very considerable length of new sewer constructed on the line of the old one, without interfering with the flow of the sewage. This passed away through drain-pipes laid on purpose beneath the bed of the new sewer. The new culvert, to carry off the storm waters that enter the sewers, begins where the sewage is ordinarily pumped into the rising mains for the sewage farm. The point of junction is the long and lofty brick chamber in which the luncheon was given. It is on a curve, so that one end cannot be seen from the other. Across the middle there is an opening in the brickwork arch which is to be glazed over. A temporary covering of canvas ensured protection against the weather during the champagne luncheon and tea. From the yard of the pumping-station the visitors descended by stairs to the floor of the chamber, into which the mingled storm water and sewage are to be turned just at those times when the bulk of both combined is too much for the pumps to deal with. Then the mouths of two meeting sewers will be opened, and the released volumes will rush into the chamber, spread over its wide floor, and when half the chamber is filled up to the height of a crossing-bar, will flow over that bar down the new culvert for a mile and a half to the river, joining it in such a way that each stream will be an induced current to the other. Riding on a contractor's line from the chamber to the river, the party entered the culvert, and walked back through a considerable length of it. For this inspection it was lighted by hundreds of candles fixed by clay to the sides. This enabled the party to see the character of the work all through. The next step in the inspection was to leave the storm overflow, which is for use at exceptional times, and to go to the top of the rising mains, on the summit of the sewage farm, at an altitude of 164 ft. above the level of the outfall sewer at the pump-wells. Here was seen the immediate effect of the pumping below—the sewage flowing out of the bell-shaped mouths of the mains into the tanks and passing by various channels in different directions over the surface of the farm. Whilst it was admitted that the clay soil was very effectively dealt with, still the sight of the sewage lying in one part upon acres of swamp provoked comments which revived what appears to be a local controversy, as to whether the untreated sewage shall continue to be put upon the land or whether the sewage shall be treated by precipitation. One party hopes for success without precipitation, and another party believes that it ought to be adopted sooner rather than later. The river, the reconstructed sewers, the storm overflow culvert, the pumping engines, and the sewage farm, complete the round of related topics. Outside it are three refuse destructors, with six cells each, in different parts of the town. Some improvements made by Mr. Biddles, the foreman, were shown. One is that the bars under the fire are made to move like clasped fingers, so that one-half combs the other half, and no clinkers can adhere to the bars. There are also arrangements for drying rubbish before it is burned, and submitting the fumes to additional heat.

In the paper which Mr. Mawbey read, he said that his predecessor, the late Mr. J. Gordon (to whom he paid a tribute which was heartily endorsed by the meeting), designed the new main sewerage system of Leicester, the present population of which is estimated at 185,000, while its area, consequent on the boundary extension in 1890, has increased from 3,303 to 8,534 acres.

The Normal Drainage.

The chief feature of the scheme was the division of the town into high, middle, and low level zones, each zone as far as practicable dealing with its own excess of storm-water, instead of the higher districts deluging the lower ones and flooding the cellars. At the local storm overflow chamber for each district a penstock is adjusted so as to admit forward to the low-level sewers the ordinary sewage and storm-water equal to a rainfall of 2 in. in twenty-four hours. The lines and directions of the new sewers follow as far as practicable those of the old main trunks at such different levels and gradients as are required to obtain the necessary storm overflow for each district. The old sewers in all cases have been abolished, and in addition to the great sanitary advantage of getting rid of the abominable ground pollution caused by the badly-constructed old sewers, their removal secured the interception of all the private drains. The whole of the brick sewers are built with Portland cement mortar in the proportion of 1 oz. of cement to 3 of sand, and have brick inverts, and in all cases where it was necessary to alter the old connecting branch sewers they have been replaced by Hassall's patent jointed pipes; in fact, all new pipe sewers in the town are now being laid with these. It has been found necessary in all cases to lay subsoil pipes under the inverts of the new sewers, not only to deal with the subsoil water, but to carry past the works the normal flow of sewage until the brick-work was complete and private drains connected with the new sewer. Excepting where possible to deliver by gravitation into a lower sewer, the sewage and subsoil water are conveyed to sumphs and pumped into the completed part of the sewer, the work in progress being protected by a head wall across the sewer, in which was placed a pen-stock, which, in case of storms, was opened to carry off the increased flow when the works were flooded. In consequence of the great outcry against open surface ventilators, a number of these had been closed up. The present built area is about 1,925 acres, the length of new sewers in the scheme is about 10 miles, and the estimated cost when completed about 105,000*l.*

The Storm Drainage.

Hitherto the effect of heavy rain had always been to backwater the sewers over a somewhat considerable area, causing serious cellar flooding, pollution of the soil, and the forcing out of foul air in densely-populated districts. It had for many years been admitted that the best remedy was to convey a good proportion of the storm water to some point in the lower reaches of the river where a free outfall could be obtained. The late Mr. E. L. Stephens recommended this when Borough Surveyor, and the late Mr. Gordon also prepared a scheme for the purpose. Mr. Mawbey prepared a scheme which received the unqualified approval of the Council and of the Local Government Board. Some of the difficulties which have been overcome were—(1) to provide an outfall away from populated places and at once satisfactory for all time; (2) to avoid syphons under the river; (3) to avoid constructing the culverts in embankments along and across the flood areas of the river; (4) to have only one culvert instead of two. The volume due to a rainfall of 2 in. in twenty-four hours, which the main sewers were designed to carry off into the storm outfall culverts proposed by Mr. Gordon from the actual built area in 1886, was 63 million gallons. Mr. Mawbey increased the full discharging capacity to rather over 69 million gallons in twenty-four hours, which would suffice for a rainfall of 1½ in. on double the present built area, and he estimated that as a rule the storm culvert would have done its work long before the floods had risen at all. The present line was selected so as to be as direct as possible, and to bring the culvert below the surface of the ground. The 1,214 yards of tunnel were divided into eight lengths by seven shafts at average distances of 455 ft. At each shaft a steam pump was fixed into a sump, sunk below the invert of the culvert, and the work was kept dry by 12-in. stoneware subsoil pipes. A very considerable quantity of water was met with in the open trench work, and also in one portion of the tunnel. The tunnel is for the most part through red and grey marl, but in one part for some distance the gravel dips down nearly to the invert, necessitating leaving in the upper timbers. The total amount of the accepted tenders was 71,446*l.*, Nos. 1 and 3 contracts amounting to 49,146*l.* 2s. 7d., being let to Messrs. Bentley, and No. 2, amounting to 22,301*l.* 17s. 10d., to Mr. Thomas Philbrick. The works were commenced in August last year, and will be shortly completed. Excellent progress had been made, and great credit was due to the contractors for the way in which the work had been carried out.

The Pumps.

At the pumping station the sewage first passes through a coarse screen to intercept large substances, then through a double set of fine screens.

Thence it flows into a middle reception chamber, and on through penstocks into two separate pump wells. The sewage is forced from the pumping station through two 33-in. rising mains, for a distance of about a mile and a half into the distribution tanks at the sewage farm, to a net height of about 163·66 ft. above the invert of the outfall sewer at the pump wells. The dry weather flow of sewage is now about 6⅔ million gallons a day. There are four engines of the independent rotative compound condensing beam type. The diameter of the high pressure cylinder is 30 in., with a stroke of 5 ft. 9½ in., and that of the low pressure cylinder 48 in., with a stroke of 8 ft. 6 in. To each engine there are two main pumps for the sewage, of the piston and plunger type, one at each end of the beam having a stroke of 5 ft. 9½ in., the diameter of the piston being 27¼ in. The two main suction pipes are 3 ft. in diameter, leading from the pump well and screen chamber to each pair of engines, and a steel air vessel 25 ft. 9 in. high by 5 ft. diameter is fixed to each rising main. The air pumps and condensors are of the single acting jet type. The fly wheels, of cast iron, are 21 ft. in diameter, and weigh about 21 tons each. The beams weigh about 15 tons each.

There are eight double-flued Lancashire steel boilers, each 20 ft. in length and 7 ft. in diameter, fitted with seven conical cross tubes in each flue, and designed for a working pressure of 80 lbs. to the square inch. The cost of the pumping-station, exclusive of land, was 54,970*l.*, of which 13,667*l.* was for main building, engine foundations, coal store, and chimney, and 25,286*l.* for the engines, boilers, &c.

The official trials of the engines and boilers, carried out under the personal direction of the Borough Surveyor, extended over eight days. In addition to that, in order to check the quantity of sewage pumped on to the farm, it was discharged over weirs at the farm tanks, and gauged day and night about every ten minutes during most of the pumping operations of the trials. In all the tests three boilers were used to supply steam for two engines.

At the luncheon in the engine-room of the pumping-station, Mr. Eayres proposed, in eulogistic terms, the health of their hosts, and said the engines they saw before them were second to none in the country. Leicester was to be complimented on possessing a firm to whom the authorities could entrust a work so great.

Mr. Mawbey, giving details of the engines, said they could not be beaten for easy, economical, vibrationless working.

Mr. Ritchie spoke very highly of the engines, as did Mr. Santo Crimp.

Mr. Comber, of Kidderminster, spoke in a similar strain, emphasising the silent working of the engines as proof of their excellence and economical working.

The Sewage Farm.

The area of the farm is 1,700 acres, and the area really available for sewaging about 1,353 acres. The farm is now dealing with the sewage from about 165,000 of the present population, which equals 122 persons per acre of land available for sewaging, the sewage from the remaining 20,000 of the population being at present treated upon the Knighton and Belgrave sewage farms in the added areas. A hundred acres of the land at Beaumont Leys is the freehold of the Corporation, and was purchased at a cost of 13,000*l.*, the remainder being leased at terms which mostly will expire in twenty-three years' time. Generally speaking there is only a foot or so of good friable soil, underneath which are two to three feet mostly of stiff yellow clay, and below the latter blue boulder clay of great depth. Crude sewage, in the absence of chemical precipitation, must first be treated on arable land, and finally purified on pasture or rye grass, and this has been done as far as possible. Each field or area is isolated for separate and independent treatment. The drainage of each except the bottom fields, is separately intercepted by a new pipe four yards from the hedge. The crude sewage is put on to the highest part of each field.

The intercepting arrangements are under such control that the sewage can be discharged over and through the land as many times as may be requisite to effect satisfactory purification. In consequence of the nature of the soil, from 550 to 600 acres of land have had to be sewaged at one time. In wet weather it has been ten or twelve weeks before the land could be ploughed, while at Birmingham and Nottingham, and even on the clay farms at Croydon, the land can usually be ploughed in a week. The sludge difficulty is great. The sewage is so heavily charged and coloured with dye water and shoddy refuse that it is very difficult to clarify. Crude sewage fouls the rye grass, and quickly coats the arable land. The difficulty in drying off has rendered some form of drainage almost indispensable. Notwithstanding enormous difficulties, the effluents have been so good that the river Soar, which, when chemical precipitation alone was in use, was each summer a horrible nuisance for miles down the valley, is now in such a state of purity that it is well stocked with young fish.

Mr. Mawbey himself did not advocate the application of sewage to clay land without previous chemical preparations. The amount sanctioned to complete all at present contemplated is 58,900*l.* for 1,434 acres, or 41*l.* 1s. 5d. per acre. Under existing conditions, with an increase of about 5,000 per year in population, he was confident that the success of the undertaking will be maintained, no matter what may be found necessary to achieve it.

At a dinner on Thursday evening, Sir Thomas Wright said he believed they had for the present got over the difficulty of persuading clay to receive and purify sewage.

At the visit to the farm on Saturday, Mr. Mawbey remarked that if the farm area had been flat it must inevitably have failed, owing to the nature of the subsoil, but as the land sloped towards the brooks and the river on either side, they were able to intercept the sewage and pass it over the surface until the effluent became perfectly pure. The sewage was put on to soil prepared for it, and the liquid then conducted to grass land, which bore excellent crops. Some of the land, as was pointed out, was under broad irrigation, but in other parts the Committee had laid out what are termed "earth tanks." Here the sewage is carried, and after a week or ten days it is allowed to dry off. The liquid flows on the adjoining grass, and the refuse is then ploughed into the soil and prepared for cropping, mangolds, swedes, or oats, as the case may be. The plan, as Mr. Mawbey stated, is to keep the sewage moving, passing over the land again and again. In this way it was prevented from becoming foul, and it was also continually in contact with the air. The soil might in time become sewage-logged, and if that danger threatened they would have to submit the crude sewage to chemical filtration, and pass the effluent over the farm, all of which might then be brought under cultivation.

Mr. Collins pointed to a field which had already given four crops of grass, and on which a fifth is now growing luxuriantly, and said that had produced 20*l.* per acre this year. They had 2,000*l.* worth of grass already this year, the highest price being 7*l.* 7s. 6d. per acre. From 5*l.* to 6*l.* per acre was a common figure, and the purchasers cut and carried it at their own cost. Of course it did not do to put crude sewage on grass land.

Mr. Mawbey said the committee were making an interesting experiment. He had no great faith in it himself, but they were trying the plan fairly, and if it succeeded it would be a good thing.

Sir Thomas Wright said they had now abandoned the use of chemicals, and the committee would not re-introduce them unless they were compelled to do so. By the system now being worked they put their sewage first where they needed it, and they ploughed it into the soil with excellent results so far.

At the Saturday luncheon, Mr. Walker, of Croydon, expressed the opinion that the committee were on the right track in the operations they were pursuing at the sewage farm, and that success was nearer than some seemed to anticipate. They had everything to encourage them in the state of the place, and in a few years they would see a still further improvement.

COMPETITIONS.

Inveresk, near Edinburgh.—The plans submitted by Mr. J. Macintyre Henry, of Edinburgh, in a recent limited competition for altering and reseating the parish church of Inveresk have been adopted by the heritors and congregation. Including a new organ by Messrs. Lewis & Co., London, the cost of the work will be about 4,000*l.*

Royal Academy Lectures.—A course of six lectures is announced by Professor Aitchison on Architecture (the special subject not yet stated), to commence on January 29 of next year; the succeeding lectures of the course to be delivered on February 1, 5, 8, 12, and 15. The subject will be "The Advancement of Architecture."

Illustrations.

ST. MAGNUS' CATHEDRAL, KIRKWALL.*

More than one writer upon this Cathedral has given expression to a pretty general first impression of surprise at its richness and extent, considering the out-of-the-way situation Kirkwall occupies. On closer scrutiny this appearance of extent is found to be the effect of skilful proportions rather than of actual size; given length and height, width, it would seem, may be reduced to the minimum. The transepts internally appear almost majestic, and yet their width is but 17 ft., and that is typical of the general scale, the side western doors being only 2 ft. 7 in. wide.

What particularises St. Magnus is its colour treatment; most unfortunately the employment of a variety of stones has meant, in the case of the yellow sandstone, the introduction of a very perishable building material; this notwithstanding, Kirkwall is the best-preserved of all the Scottish Cathedrals, only Glasgow approaching it in that respect.

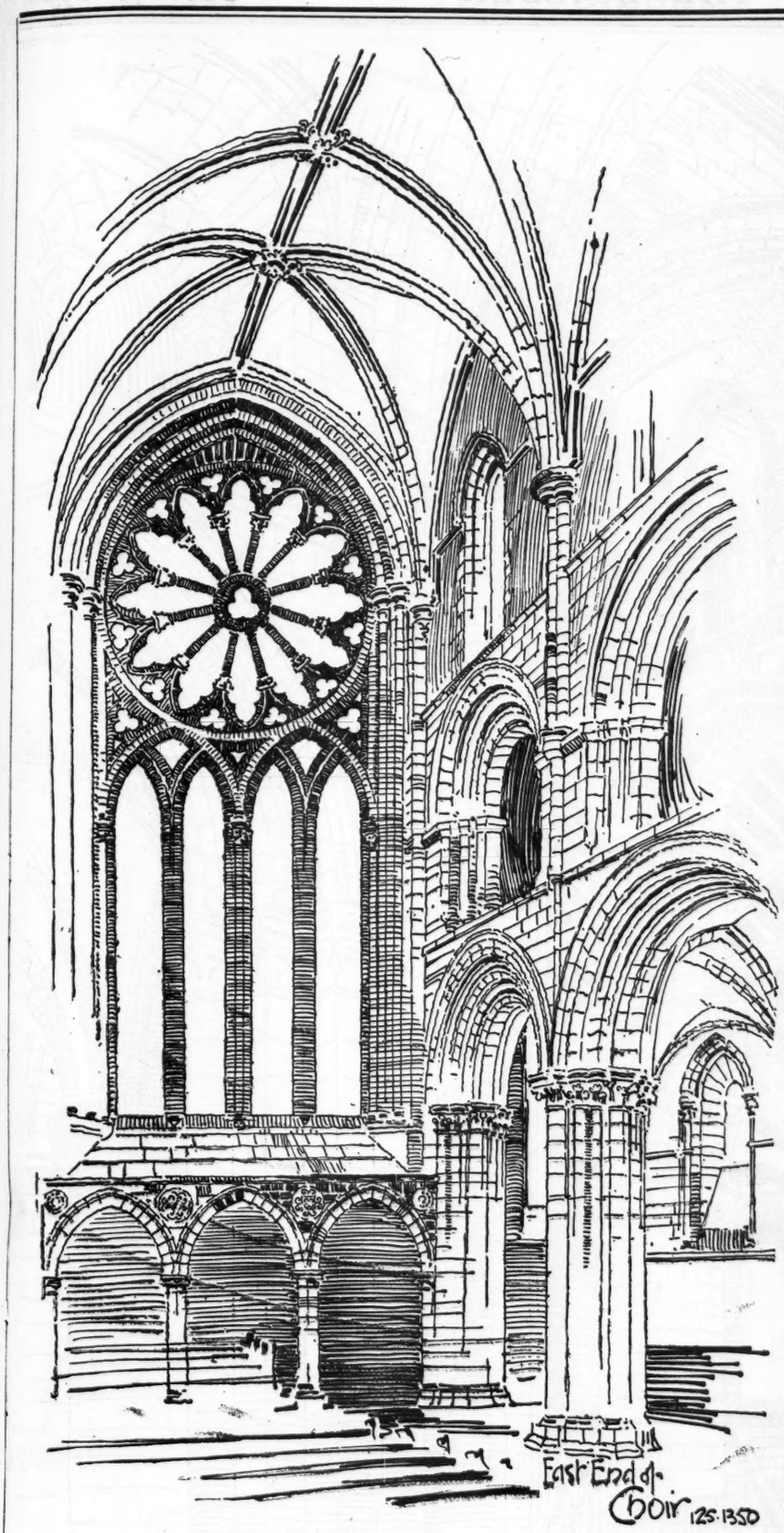
The patron saint was a Norwegian earl, Magnus, treacherously murdered in 1115 by a cousin who, with him, shared the government of Orkney. Of a gentle disposition in life, after death his virtues were magnified, and he was canonised in 1135. By that time the husband and son of a sister of the martyr, engaged in attempts to win back their usurped inheritance, vowed, if success were theirs, to erect a noble church to the memory of St. Magnus. They succeeded. The building was begun by 1137, and in three or four years had advanced far enough to be consecrated and receive the remains of the saint, till then deposited in the church of Birsay. There then existed several churches throughout the Orkneys: that of St. Ola, built a century earlier, was distant from the site of the new cathedral only a few hundred yards.

Carried from Iona, Christianity had obtained a footing in the northern islands by the seventh century, but during the period between 870–1000, that is until the time when King Ola formally professed the Christian faith, the north settlers were pagan.

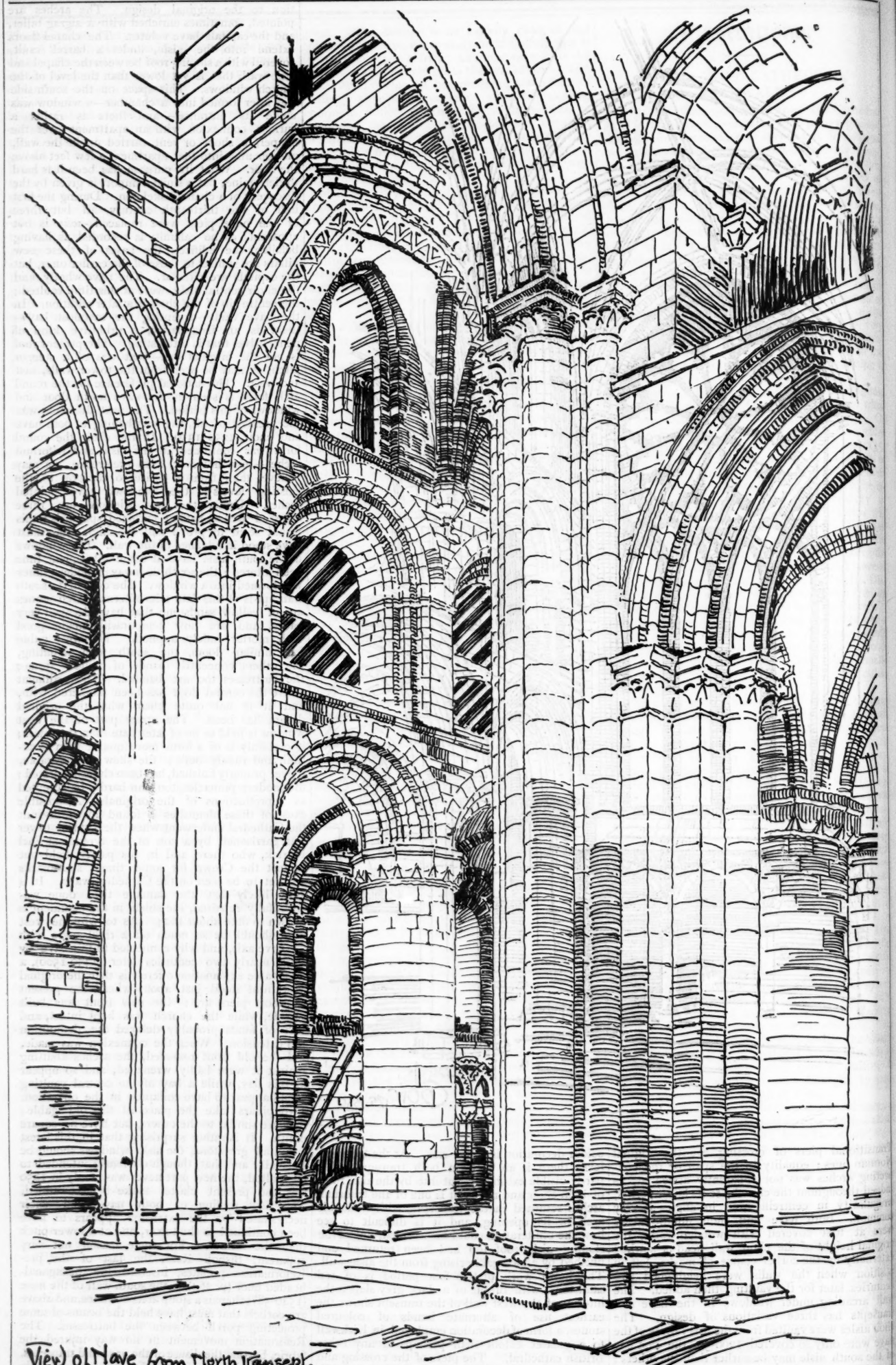
Thereafter several churches are known to have been built; Birsay the chief, and see of the first bishop, William the Old (consecrated 1102); from that time the succession of prelates is clearly preserved. In 1154 Drontheim, in Norway, became the metropolitan see, and so continued to be until the cession of the islands to Scotland in 1468, when the ecclesiastical rule was transferred to St. Andrew's. Before that time the Norse earls, who held sway in Orkney, were practically independent princes, and for a time held possession as well of the northern counties of Scotland. Intermarriage with the Scottish nobility prepared the way for a change of allegiance. Orkney and Shetland had been pledged to Scotland as surety for the payment of the dowry of Margaret of Norway when she married King James III., it being stipulated that until redemption Norse laws and customs were to be preserved; but the dowry never was wholly paid, so the islands lapsed to the Scottish crown. It can hardly be said that the introduction of the feudal system was to the advantage of the Orcadians. The Orkneys were leased to a succession of Scottish earls, who were frequently most extortionate. One of them, Patrick Stuart, who built the Earl's Palace adjoining the Cathedral, made himself so obnoxious that, bishop and people uniting in resistance, he and a son were brought to trial, and executed at Edinburgh in 1614.

The Cathedral, as at first built, would seem to have consisted of a nave, transepts, and a choir, terminated with an apse; how the choir aisles ended is uncertain, they may have even met, circling round the apse. There was then no door in the south transept, but in the nave south aisles were two; the east one was built up subsequently (1250-1350), when it is supposed any intention of having cloisters or monastic buildings, if such was ever entertained, was finally abandoned. The three nave pillars, of the first period (1137-1160) that remain have octagonal capitals; the arches in the east walls of both transepts appear to have been formed at the very first, though closed up until the chapels were added. Quite possibly in the heart of the

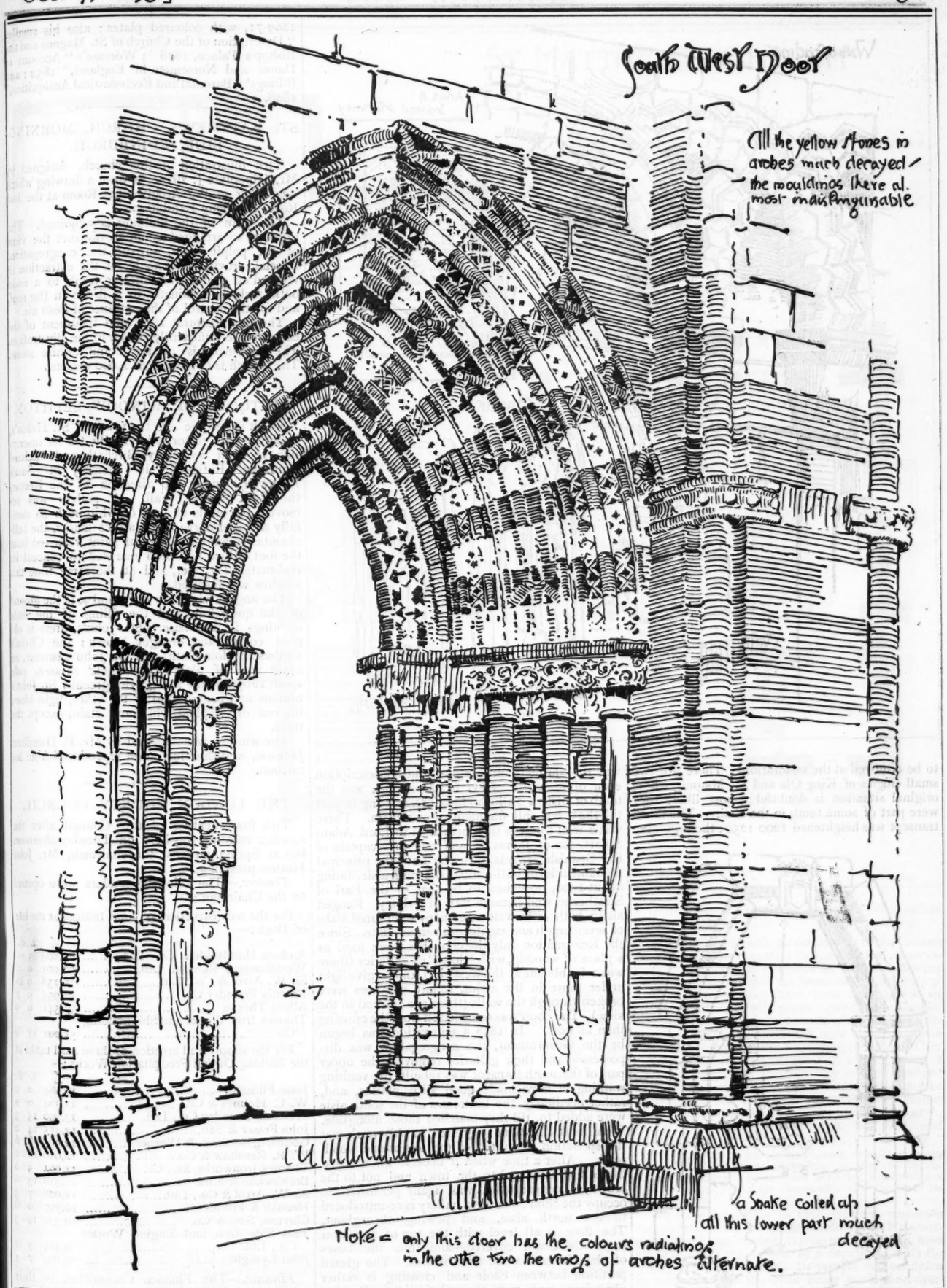
* The series of illustrations of the Ancient Cathedrals of Scotland, which was begun in our issue of July 1, will be continued in the first number of each month, until December next. Particulars of this, and of the series of "Cathedrals of England and Wales," which ended in June last, will be found on page 272.



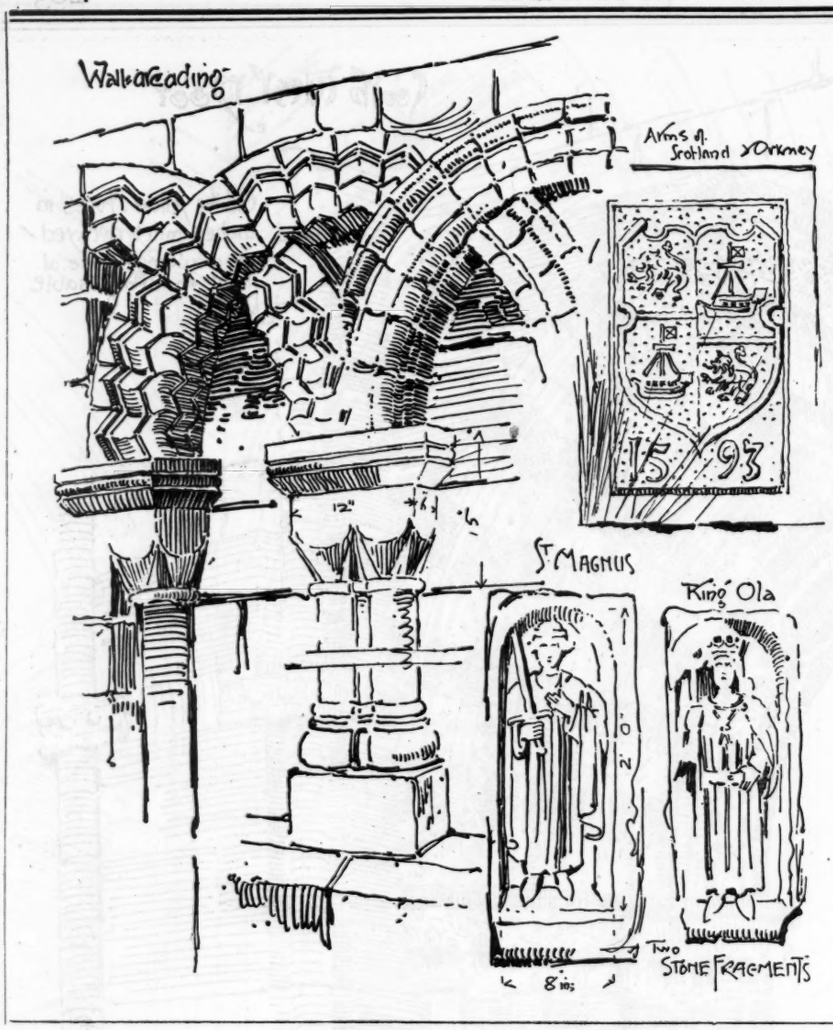
Transitional piers of crossing are the original Norman ones; equality in the span of the connecting arches was not apparently aimed at, as indeed throughout the church, to its latest period, irregularity in centreing and in angles is very common. Both nave and choir middle aisles were at first covered with wooden roofs, the original height of the choir wall head is marked externally by the corbel course of masks, left in position when the walls were heightened two centuries later for the vaulting then added. The wall arcading under windows in the nave and transepts has three variations of design. The choir aisles were vaulted from the first; those of the nave were only so covered 1200-50, the east bay of the south aisle may be earlier than the others: it and the adjoining one show faint remains of colour decoration in their ribs. At the triforium level there is an arch in both transept walls, partly visible externally, cut into by the aisle roofs of both choir and nave: it is one of the triforium arches returned in the transepts, with a double arch in its opening, and it is difficult to see how the obliteration could be avoided, unless the sloping aisle roof too had been returned and finished by a half gable rising from the aisle wall. The hewn work of this first period is of red sandstone, with rubble of a dark grey slate; the interior of the west wall of the transept shows the earliest use of alternate bands of coloured stones, a form of decoration employed in Kirkwall to a greater extent than perhaps in any other British cathedral. The piers of the crossing and the two chapels (1160-1200) were the first addition to the original design. The arches are pointed, sometimes enriched with a zigzag billet, and the capitals have volutes. The chapel floors extend into the aisle, under a barrel vault, covered with a sloping roof between the chapel and aisle wall, that is yet lower than the level of the church windows. This space on the south side was later formed into a chamber—a window was made its entrance—and there is rather a curious connexion with an apartment over the chapel, a shoot or vent carried up in the wall, and opening into that apartment a few feet above the floor. What its purpose has been it is hard to determine, but a sinister import is given by the discovery of a chained skeleton. During the first half of the thirteenth century, all but three of the nave piers were replaced—*why* is not apparent, as no calamity is recorded as having befallen the edifice; the bases of these new pillars are similar to those of the earlier ones, but the capitals are circular. The nave wholly, and the choir central aisle, were at this time vaulted; the centre rib of the choir is a later addition. In the nave vault—excepting the eastmost bay—there is an irregularity, a primitive kind of pendentive, that is interesting. The present roof is not the original one—that was of a steeper pitch, as may be seen from the tower walls, east and west. The national preference for the round arch form is seen in the nave north door and windows of this period. The next alteration was the greatest of all, the lengthening of both nave and choir, 1250–1350. In the choir the round form was continued in the aisle and triforium arches—less, however, from preference, we may believe, than from a desire to conform to the existing levels; the windows have pointed arches. Under the east window are three recessed arches, having enriched spandrils; this would seem to prove that the high altar must have stood in advance of the wall. The windows in the south aisle have at some subsequent time been altered; the south doorway in modern times was formed into a window. The door in the south transept is of this date; its alternate arch stones are of yellow sandstone that have decayed very badly, and are now temporarily made good with mortar rudely applied. The west gable has similar doors, the south with radiating, the others concentric bands of yellow stone; the buttresses too are banded. The pediment above the central door has been tampered with, and it is not quite clear what the original design has been. The upper part of the west window is held to be of later date than the lower; it certainly is of a form more quaint than beautiful, and rudely built; the skew of the gable, if ever properly finished, has been clumsily altered; the modern pinnacles, too, can hardly be accepted as reproductions of the originals. A possible cause of these blemishes is found in the assault the Cathedral underwent when the central tower was garrisoned by a son of the tyrannical Earl Patrick, who there, and in his palace, held out against the Crown for some time: shot-marks are yet to be seen on the Cathedral walls. It is quite likely that the damage then done was unskilfully repaired, the shield in the pediment is known to date about 1624. As to why the west front should be so much off a right-angle with the nave axis, and why connected to the nave by work nearly two centuries later (1450-1500), a reasonable explanation offered is that the original west front stood just about where the present westmost piers are; the new front was built outside, while the church was kept intact, and lack of funds probably delayed the demolition and extension. When the connexion was made, and the old front removed, the arches abutting against it were badly wrenched, and so appear to this day, while a bay of the central vaulting would appear to have collapsed in the operation. Two pillars take the place of the old gable; they are similar to the others, but have no square plinth. It is rather surprising that in this latest work, all greystone, the aisle windows should be so small; and that, though obviously intended to be vaulted, the new part never was: only in 1850 was the present plaster make-believe added. The new roofing of both nave and choir necessitated by the extension appears to have been continued to the tower, and at a lower pitch than the former. For some reason not very apparent, Bishop Reid, the last of the pre-Reformation prelates, inserted the hexagonal-headed door (p. 264) in the south wall of the nave (1540-58); there is a stoup at its entrance, and above are corbels that must have held the beams of some projecting porch between the buttresses. The Reformation movement in no way injured the fabric, beyond the disuse of the nave and transepts. The first mishap befell in 1671, when the steeple



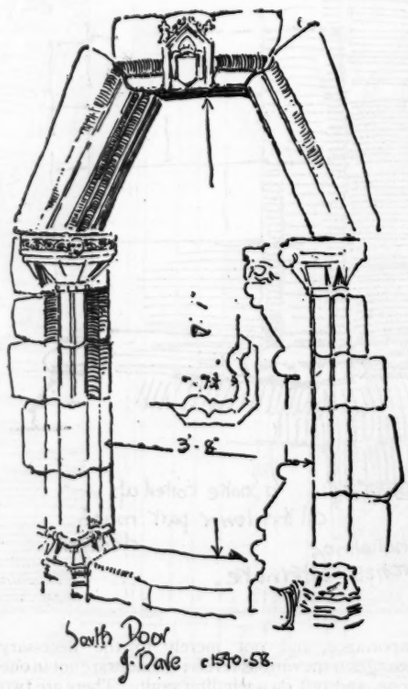
View of Nave from North Transept.


South West Door
All the yellow stones in arches much decayed / the mouldings there almost undistinguishable
2·7
a Snake coiled up
all this lower part much decayed
Note = only this door has the colours radiating / in the other two the rings of arches alternate.

was fired by lightning and quite destroyed. What appearance this first steeple had it is hard to say. That which now takes its place is 123 ft. high; its corner pinnacles and the parapet are modern, and altogether this feature is the weak point in design of the whole Cathedral. It contains still four bells preserved from the fire; the roof covering, as elsewhere, is a rough grey slate that looks very well, of a thickness varying from ¾ in. to 1½ in., and pointed with mortar in its vertical as well as horizontal joints; the hips and ridging are also of this stone. The present flagged floor of the nave is on a slope, rising 12 in. from the west front to the entrance to choir; to the top of the altar steps is 4 ft. higher still, and to gain that height it is supposed that besides the three altar steps proper there may have been others at the junction of Norman and Early English work and at the entering from crossing. What is noteworthy is the importance given to the two staircases; their width is considerably more than the side doors of the west front or the one in the transept, and would lead to the supposition that they were intended to give access to apartments of some importance, and not merely to the necessary passages at the various levels; the steps are not in one stone, and rest on a winding vault. There are two apartments at the triforium level over the chapels; that above the south one is of most importance, and is vaulted; it has the shoot or vent to the small cell or chamber already noticed, and is now used as a small store or museum for all the fragments of woodwork, carved stones, and tiles that have been found. There are preserved fragments only of the stallwork (Earl Patrick's pew), illustrated in Billings' view, but allowed



to be removed at the restoration. There are two small effigies of King Ola and St. Magnus, whose original situation is doubtful; most likely they were part of some tomb in the choir. The north transept was heightened 1200-1250; the beginning



of the former pitch is seen on the face of the tower, its staircase stops abruptly and is unfinished, but corbels left about the level of the clearstory seem to imply a floor; the transept would thus have a flat ceiling, above which was a commodious apartment. At one time there must have been many tombs in the choir, but these, through neglect and spoliation, have now disappeared. Chief of all was the shrine of St. Magnus, but no description even of it exists. Next in importance was the tomb of Bishop Tulloch (1422-55), existing in part till 1845, but only fragments now remain. There was a wall-tomb in the north aisle to Lord Adam Stuart, son of James V., and one to a captain of the Spanish armada. In the nave the principal monument is the wall-tomb in the south aisle, dating about 1300, presumed to be that of the Earl of Stratherne, who became Earl of Orkney. Ranged along both aisle walls are many sculptured slabs of seventeenth and eighteenth century date. Since the Reformation only the choir has been used as a place of worship, with "lofts" or galleries (there was a double one at the west end), and, to give light under those in the aisles, square windows were broken through the walls (these are omitted in the view). The choir was screened off from the crossing then as now. In 1848 a renovation was begun by the Government, the congregation was dispossessed and their galleries removed, the upper part of the south transept was rebuilt, the vaulting wanting in nave made good with plaster, and, rather needlessly, the buttresses of the south aisle were added to, till they matched those alongside. What must chiefly be regretted in this work was the spoliation permitted of the tombs and woodwork. After a time when it became known that the edifice belonged to the town and not to the crown, a congregation was again permitted to occupy the choir: so now a gallery is re-introduced to the north aisle, and pewing throughout. The floor is all level with the top of the altar steps—these are covered—and thus the bases of the Norman work are hidden. The glazed partition between choir and crossing is rather obnoxious, and with the substantial walls that close up both chapels ought to be removed. The mutilation of the north chapel by the introduction of the vestry floor is quite gratuitous, and should be remedied. Some of the windows have recently been restored in a very creditable manner, so it may be hoped that these other improvements will not long be delayed. South of the west door is a mutilated church cross, dated 1621; it is supposed to be a reproduction of an earlier one. Most information about St. Magnus is to be had from the excellent monograph prepared by Sir Henry E. L. Dryden, published in the "Transactions of the Architectural Institution of Scotland," 1869-71, with coloured plates; also his smaller "Description of the Church of St. Magnus and the Bishop's Palace, 1878"; Worsaae's "Account of Danes and Norsemen in England," 1852; and Billings' "Baronial and Ecclesiastical Antiquities," 1848.

ST. MATTHEW'S CHURCH, MORNINGSIDE, EDINBURGH.

The illustration of this church, designed by Mr. Hippolyte J. Blanc, is from a drawing which was hung in the Architectural Room at the last Royal Academy Exhibition.

The plan of the building is subjoined. The piers are so arranged as not to obstruct the view of the pulpit from any of the congregation. Special provision is made for the extraction of vitiated air through an interior trunk to a main outlet, which terminates in a flêche in the roof, and for the control of the entrance of fresh air.

The architectural style and treatment of the exterior are sufficiently shown in the illustration. The masonary is of red Dumfriesshire stone. The church is to seat about 1,000 persons.

CARTOON FOR WINDOW, SEPHTON.

Some little time ago the tower of St. Helen's, Sephton, was restored internally (as an inscription records) by Mary Birchall and Richard Rainshaw Rothwell, in memory of Sarah Rothwell, under the direction of the Rector, the Rev. G. W. Wall. A gallery was removed, the walls cleared of whitewash so carefully as to preserve the mason's marks, the bell-chamber refloored, a coat of paint removed from the font (which had been marbled to conceal its real material!), &c., and at the same time this window was inserted.

The angel's wings are ruby, and so is the ground of the quatrefoil, and the filling of the little openings in the base. St. John's dress is old gold colour and orangey brown; the Christ's nimbus and loin-cloth, and St. John's banner, an agate sort of glass; the angels' dresses, pale spoilt ruby on blue and greyish greens; St. John's nimbus and background of the other, light blue; the rest of the glass white and stain, except the trees.

The window was designed by Mr. F. Hamilton Jackson, and the illustration reproduced from his cartoon.

THE LONDON COUNTY COUNCIL.

The first meeting of this Council after the summer vacation was held on Tuesday afternoon last at Spring-gardens, the chairman, Mr. John Hutton presiding.

Tenders.—The following tenders were opened by the Chairman:—

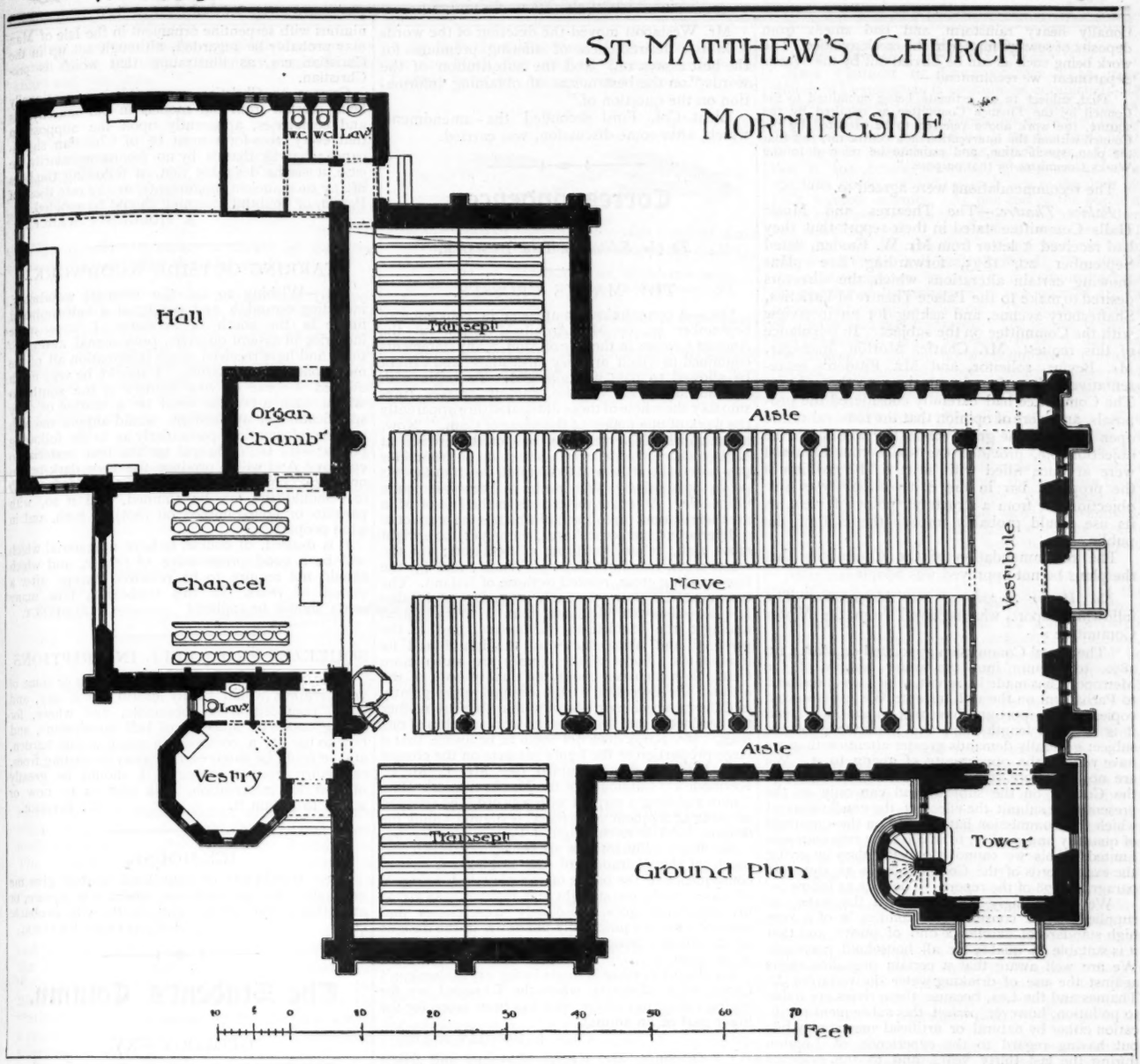
For the reconstruction of four bridges at the Isle of Dogs:—

	£	s.	d.
Andrew Handyside & Co., Ltd.	63,863	3	10
Woodhouse & Rawson, Ltd.	62,001	0	0
Sir W. Arrol & Co., Ltd.	58,158	9	11
Phœnix Foundry Co.	57,955	9	7
Alfred Thorne	57,541	0	0
Thames Iron Works and Shipbuilding Co.	55,021	11	0

For the supply and erection of three steel tanks at the Barking Outfall Precipitation Works:—

	£	s.	d.
Jesse Fildesley	16,284	2	0
W. C. Holmes & Co.	13,764	0	0
Whessoe Foundry Co., Ltd.	13,296	15	3
John Fraser & Son	12,455	14	2
Goddard, Massey, & Warner	12,095	8	6
W. R. Renshaw & Co.	12,010	16	6
Thames Ironworks, &c., Co.	11,994	5	0
Braithwaite & Kirk	11,318	13	6
Sir W. Arrol & Co., Ltd.	11,028	7	3
Heenan & Froude	10,797	0	0
Clayton, Son, & Co.	10,330	14	3
Tees Side Iron and Engine Works Co., Ltd.	9,424	3	4
John Lysaght	9,169	7	4

Finance.—The Finance Committee, in their report, stated that they had considered the estimate of the receipts and expenses of the Council for the year ending March 31, 1894, with reference to the amount required to be raised in the second six months of the year by means of contributions, with the view of ascertaining whether revision was necessary. As it did not appear that "the amount of contribution or rate estimated at the commencement of the year would be larger than was necessary or would be insufficient," they did not recommend the Council to revise the estimate and alter the rate. The rate therefore remains at 6½d. in the £, as estimated by the Council in April last.



Loans. — On the recommendation of the Finance Committee the following loans were granted :—8,000*l.* to the Vestry of St. Pancras for the purchase of land to be utilised for electric lighting purposes ; 11,171*l.* to the Vestry of St. Martin-in-the-Fields for paving works ; 5,100*l.* to the Vestry of Kensington for wood paving works ; 4,500*l.* to the Guardians of St. Pancras for the erection of an isolation block at their schools at Leavesden : and 14,000*l.* to the Guardians of Lewisham Union towards the cost of erecting an infirmary.

Proposed Tramways over Westminster Bridge. —The Highways' Committee presented the following report and recommendation :—

"We have considered the resolution passed by the Council on June 27 last, on the motion of Lieut.-Col. Ford, referring it to us to consider and report on the expediency of action being taken to secure the construction of a tramway across Westminster Bridge, and on to and along the Victoria Embankment up to the approaches to Charing Cross ; and in connexion with this matter have had the advantage of an interview with Col. Ford.

On October 18 last we reported to the Council on this subject, and recommended that as the London Tramways Company declined, owing to the opposition offered to the proposal for the tramway, to resume negotiations for a lease of the tramway if made, the Council should not re-introduce the Bill which was rejected by Parliament last session. This recommendation was adopted by the Council. We would point out that a very large portion of the London Tramways Company's system will become purchaseable by the Council in 1898 ; and we are of opinion that, although there is a public demand for the tramway, it would be better to defer any further application for power to construct it, until nearer the time for the purchase by the Council of the undertaking with which the new tramway would be in close connexion. We recommend :—

'That no action be taken by the Council at present to obtain powers for the construction of a tramway over Westminster Bridge and along a portion of the Victoria Embankment.'"

Lieut.-Col. Ford moved as an amendment that the recommendation be referred back to the Committee for further consideration.

Mr. Torr seconded the amendment.

Mr. Westacott contended that the Committee had done all they could to get an amicable arrangement with the tramway companies, and as they had failed in their attempt there was no use proceeding further with the matter in the meantime.

The amendment was lost, and the recommendation of the Committee carried.

Highgate Archway.—The following report and recommendation of the Highways Committee were presented :—

"On July 11 last the Council decided to apply for Parliamentary powers for widening Archway-road and, in connexion therewith, the widening of the Highgate Archway, the cost of the work, estimated at 27,000*l.*, to be borne (with the exception of 1,000*l.* which the Ecclesiastical Commissioners have agreed to contribute) in equal proportions by the Council, the Middlesex County Council, the Vestry of Islington, and the Hornsey Local Board. We at that time reported that the Hornsey Local Board had suggested that the archway when reconstructed should be afterwards maintained by the two County Councils as a county bridge, and we have now to state that the Middlesex Council has attached to its consent to contribute a condition that this arrangement shall be made. There appears to be at present no statutory provision for the repair and maintenance of the structure, and we are of opinion that the proposed arrangement may be accepted by the Council. We therefore recommend—

'That the Parliamentary Committee be instructed, in preparing clauses to authorise the reconstruction of Highgate Archway, to insert a provision that after such reconstruction the archway shall be repaired and maintained at the cost of the County Councils of London and Middlesex in equal shares.'"

The recommendation was agreed to.

Drainage.—The Main Drainage Committee reported as follows :—

"In accordance with the resolutions of the Council on June 20 and August 1 last, a series of observations on the chemical character of the water flowing down the river Thames has been made since July 3. These, taken as they have been in a period of abnormal dryness, will prove exceedingly valuable, and the engineer and chemist are of opinion that the analyses should be continued until the river again begins to rise as the cold weather approaches. They suggest that as the whole question of the purity of the lower reaches of the river may become a subject of great importance, this opportunity should not be missed, and that the examination should continue for a further period of nine weeks at a cost of 117*l.*, or 13*l.* per week. We concur in this view, and recommend—

'That, subject to an estimate being submitted to the Council by the Finance Committee as required by the statute, the Council do sanction a further expenditure of 117*l.* for the purpose of the examination of the water of the river Thames.'"

We have from time to time received numerous complaints of the offensive condition of Hammersmith Creek, and strong representations have been made to us on the subject by a deputation from the Vestry of Hammersmith. Its present bad condition is, we find, due to the creek being used as an overflow in time of rainstorms for the Stamford Brook sewer, and most of the sewage which enters it on those occasions ultimately finds its way to the Thames, a portion of the overflow being conveyed by an 18-in. pipe along the creek into the low level sewer. The engineer now suggests that, in addition to the existing pipe sewer, the 4 ft. 3 in. by 2 ft. 8 in. branch sewer at the lower part of the creek, which is connected with the northern low level sewer, should be extended to the junction of the creek with the Stamford Brook sewer, and he estimates the cost of the work at 1,850*l.* We concur in the opinion of the engineer, and consider it very advisable that this work should be carried out, as by this means the discharge of sewage into the Thames from the creek will be avoided, except perhaps during an excep-

tionally heavy rainstorm, and bad smells from deposits of sewage matter in the creek avoided. The work being such as can be carried out by the Works department, we recommend—

'That, subject to an estimate being submitted to the Council by the Finance Committee as required by the statute, the work above referred to be executed by the Council without the intervention of a contractor, and that the plan, specification, and estimate be referred to the Works Committee for that purpose.'"

The recommendations were agreed to.

Palace Theatre.—The Theatres and Music Halls Committee stated in their report that they had received a letter from Mr. W. Emden, dated September 20, 1893, forwarding five plans showing certain alterations which the directors desired to make to the Palace Theatre of Varieties, Shaftesbury-avenue, and asking for an interview with the Committee on the subject. In pursuance of this request, Mr. Charles Morton, manager, Mr. Beyfus, solicitor, and Mr. Emden's representative had conferred with them on the subject. The Committee had carefully considered the proposals, and were of opinion that the removal of the open boxes on the grand circle tier would not be objectionable, provided the space thus obtained were at once filled with seats. The position of the proposed bar in the exit vestibule was also objectionable from a structural point of view, as its use would probably impede the exit of the public.

The recommendation of the Committee that the plans be not approved was adopted.

The Water Supply of the Metropolis.—The following report was received from the Water Committee :—

"The Royal Commission appointed on March 15, 1892, to inquire into the water supply of the Metropolis has made its report, which was presented to Parliament on the 14th instant. We have received copies of the report and have met to consider it, but it is of great length, and the importance of the subject generally demands greater attention than we have yet had the opportunity of giving to it. We are not, therefore, in a position to make a report to the Council on the subject, and can only at the present time submit the effect of the conclusions at which the Commission has arrived on the questions of quantity and quality, to which their reference was limited. This we cannot do better than by giving the exact words of the Commissioners as stated in paragraph 178 of the report. They are as follow :—

'We are strongly of opinion that the water, as supplied to the consumer in London, is of a very high standard of excellence and of purity, and that it is suitable in quality for all household purposes. We are well aware that a certain prejudice exists against the use of drinking water derived from the Thames and the Lea, because these rivers are liable to pollution, however perfect the subsequent purification either by natural or artificial means may be; but having regard to the experience of London during the last thirty years, and to the evidence given to us on the subject, we do not believe that any danger exists of the spread of disease by the use of this water, provided that there is adequate storage, and that the water is efficiently filtered before delivery to the consumers.'

We have directed a copy of the report to be forwarded to each member of the Council, and we hope at no distant date to be able to present a full report on the conclusions of the Commissioners."

Works.—The Works Committee reported that they were satisfied with the estimates and specifications submitted by the undermentioned committees, and were taking the necessary steps to carry out the following works :—

	£
Asylums Committee. — Farm buildings, mortuary, and cottages at Claybury Asylum	14,200
Bridges Committee. — Putney Bridge—Roughing carriageway	350
Establishment Committee.—Central office—Formation of lavatory	75
Fire Brigade Committee.—Kentish Town fire-station—repaving	54
Highways Committee.—Re-metalling Victoria Embankment carriageway	3,100
Main Drainage Committee.—Northern outfall—Repairs to fencing	85

Mr. Lyon stated that the re-metalling of Victoria Embankment would be carried out during the winter, when there would be more men out of work.

On the recommendation of the Works Committee, it was decided to appoint a second assistant in the building branch of the Works department, at a salary of 200*l.* per annum.

Locomotion.—Mr. W. Saunders, M.P., moved, and Mr. Beachcroft seconded, the following resolution :—

"That the Public Health and Housing Committee be requested to consider and report on the desirableness of offering premiums for the best essays on locomotion in London, including railways, tramways, omnibuses, and steamboats."

Mr. Westacott moved the deletion of the words "on the desirableness of offering premiums for the best essays on," and the substitution of the words "on the best means of obtaining information on the question of."

Lieut.-Col. Ford seconded the amendment, which, after some discussion, was carried.

Correspondence.

To the Editor of THE BUILDER.

THE MANKS CROSSES.

SIR,—A communication appears in your issue of September 30, by Mr. Archibald Knox, on the Ancient Crosses in the Isle of Man, many statements contained in which are very misleading, and cannot be allowed to pass unchallenged. To begin with the author says, "These ancient crosses (presumably the whole of those illustrated) are apparently the work of one maker of the name of Gaut." Now, although the inscription on one of the crosses at Kirk Michael affords a certain amount of ground for this belief, the art characteristics of the monuments prove conclusively that such a theory is quite untenable. Amongst the crosses in the Isle of Man are three distinct types, each of which is the product of a different archæological area, namely (1) the upright cross slab, related to those of Scotland; (2) the wheel-cross, related to those of Wales; and (3) the free-standing cross, related to those of Ireland. The ornament also shows the same intermixture of Celtic and Scandinavian elements that is to be found amongst the Manksmen themselves, and in the personal and place names of the island and its inhabitants. Some of the crosses are much more Celtic than the others, and the quality both of the art and the execution of the designs varies greatly in different specimens, showing that they are neither the product of one brain nor the workmanship of one man. Mr. Knox does not seem to be aware that a large proportion of the figure subjects on the crosses have been already explained (see Mr. P. M. C. Kermode's "Catalogue of the Manks crosses). The "man stabbing a serpent with a sword," he refers to as being of frequent occurrence, is Sigund killing the dragon Fafui from the Sigund Fafui's-bane legend.

Mr. Knox's illustrations are beautifully drawn, but much of the character of the originals is lost in consequence of the bands of the plaitwork being in all cases made too straight and regular. As far as my experience goes, absolutely true circles and straight lines are practically unknown in the designs on the crosses, being naturally distasteful to the eye of an artist.

An absurd mistake is made in fig. 11 (Malumkun's Cross, Kirk Michael), where the T-headed key for tuning the strings of the harp has been taken for the lower part of an animal.

J. ROMILLY ALLEN.

*** Of course Mr. Knox's drawings and article were given entirely on his own responsibility. His theory that all the crosses were made by Gaut appeared to us at first sight most improbable.—ED.

SIR,—The interesting series of drawings contributed by your correspondent (September 30) together with his remarks as follows—"But what is absent from the crosses is as much a matter for wonderment as what is on them. More still a matter for wonder is the fact of the existence of the crosses," suggest the importance, now that the once-prevailing idea that the cross was exclusively a Christian symbol has been abandoned, of distinguishing between the Christian and pre-Christian use and significance of that emblem.

The leading lines determining the forms of these crosses of the Isle of Man are those of the *crux immissa* of equal arms, developed in some cases to represent the *crux immissa* of unequal arms, and connected, in both cases, with the circle or nimbus representing the disk of the sun.

The chief surface ornament is sinuous and interlacing, in some instances having a scale-like appearance, and in others more clearly showing its origin and development from the serpent form. As a matter of fact, the *crux immissa* is found to have been used in many countries as a religious emblem for centuries prior to the Christian era, and, as the mystic Tau of the Chaldeans and Egyptians, the original shape of the *crux commissa*, or letter T, was reverenced, being the initial of one of the forms of the name, Tammuz, of the Pagan saviour. To identify him with the sun this cross or letter was sometimes joined to a circle, and the connexion between the sun and the serpent is given by Owen, who states that "in the mythology of the Primitive world, the serpent is universally the symbol of the sun," the life-restoring Æsculapius, who is also styled the man-instructing serpent.

Although Satan is generally connected with the form of a serpent, it is remarkable that the Yezidis, or avowed Devil-worshippers of the present day, look upon the peacock as his emblem, stating that it was in that form that the fallen angel tempted Eve.

At any rate, these combinations of cross and nimbus with serpentine ornament in the Isle of Man may probably be regarded, although set up in the Christian era, as illustrating that which is pre-Christian.

Crosses as Christian memorials are continually being erected from old models in our churchyards and cemeteries, apparently upon the supposition that every cross-form must be of Christian significance; but as that is by no means necessarily the case, it seems desirable that, in following the lines of any such ancient monuments, at any rate those of Pagan, or doubtful, meaning should be avoided.

J. HOUGHTON SPENCER.

TARRING OUTSIDE WOODWORK.

SIR,—Wishing to tar the external woodwork, including verandah and porch, of a half-timbered house in the south of Scotland, I have made inquiries in several quarters, professional and practical, and have received much information all of the most contradictory nature. I should be very much obliged if some of your readers in the south, to whom such a process must be a matter of daily specification or application, would supply me with reliable information, particularly as to the following points :—(1) Is *Archangel* tar the best material to employ? And will it produce the very dark-brown or black colour characteristic of tarred work? (2) Should the tar be thinned, and if so, with paraffin or boiled linseed oil (hot) or both, and in what proportion?

It is desired, of course, to have a material which will be a good preservative of timber, and which should not require to be removed except after a period of years. In this connexion, how many coats should be applied? ARCHITECT.

SQUEEZES FROM BELL INSCRIPTIONS.

SIR,—I should be much obliged if you or some of your readers would kindly inform me if any, and what, composition is obtainable, and where, for taking copies or squeezes of bell inscriptions, and how to use it; a composition which would harden, and so could be safely carried away for casting from, on return from a journey. I should be greatly obliged for information, or a hint as to how or where to obtain it. W. SCORER.

ICE-HOUSE.

SIR,—Would any of your kind readers give me particulars for an ice-house, about 6 ft. square, or any other convenient size and depth, with probable cost. A CONSTANT READER.

The Student's Column.

GEOLOGY.—XV

STRUCTURAL DEFINITIONS (CONCLUDED).

OVERLAP.—When sediment is deposited off shore in a subsiding area, it successively transgresses, or extends beyond the limits of the older beds of the same formation; the later portions of the deposit are laid down progressively on the rocks as the land sinks. This phenomenon

FIG 1.

Fig. 1.—Section of Overlap in the Lower Jurassic Beds of the South-west of England.

a. Upper Palæozoic Rocks. *b*. Liassic Rocks, with conglomerate at base, resting unconformably on *a* and overlapped by the Inferior Oolite, *c*, which runs across them and on to *a*. The extension of the beds, *d*, has been arrested by denudation.

is called "overlap," and is illustrated in fig. 1, which is reproduced from a section by the late Sir Henry de la Beche.

Outlier.—Where a small isolated patch of rock has been detached (usually by denudation) from its parent mass, as is illustrated in fig. 2.

FIG 2.

Fig. 2.—Section across a Tract of Country showing an Outlier (a) detached by denudation from its parent mass (b).

Anticline and Syncline.—Earth movements have frequently caused stratified rocks to assume an undulatory character over a large area, like a succession of waves. The crests of such waves would exhibit what is known as an anticlinal

structure, and the troughs synclinal structure, as shown in fig. 3; they are familiarly called anticlines and synclines.

FIG 3.

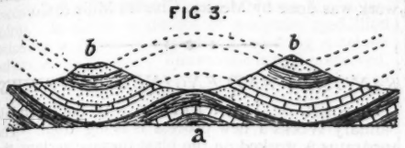


Fig. 3.—Section across a Tract of Country showing (a) anticline and (b) synclines.

In this figure it will be noticed that the synclines form the hills, and the anticline the valley between them, which seems at first sight rather paradoxical; but this is very often the case in Nature. The reverse obtained at a former period; the alteration has been brought about on the entire removal by extensive denudation of the original crest of *a* as represented by the dotted lines.

Monoclinal Folding is a structure also brought about by earth movements whereby strata have been bent up, as illustrated in fig. 4, which

FIG 4

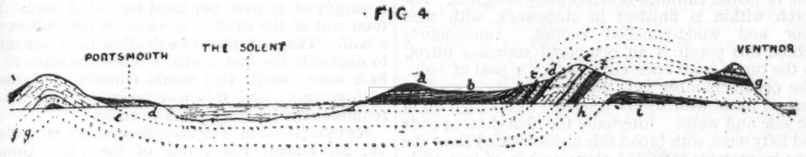


Fig. 4.—Section across the Isle of Wight to the Mainland, showing Monoclinal Fold running through the Centre of the Island.

TERTIARY.		SECONDARY.		
a. Hamstead beds.	*c.* Headon, &c., beds.	*e.* Chalk,	*f.* Upper Greensand.	*g.* Gault,
b. Bembridge beds.	*d.* Eocene beds.	*h.* Lower Greensand.		*i.* Wealden.

represents a geological sketch section from the south of the Isle of Wight through the island northwards across the Solent to Portsmouth. The monoclinal fold is very pronounced in the centre of the island. If we were to draw the section true to nature, so that the horizontal and vertical scales were the same, the bending would appear much sharper and more localised; in fact, the lower members of the Eocene strata and the uppermost portion of the chalk are often vertically disposed in the island. But we are compelled to exaggerate the vertical scale in order to bring the diagram within a reasonable compass. The section is, therefore, more or less ideal.

Contortion is a stage further, being the result of more intensified earth movements, and is illustrated by fig. 5, which is from a rough sketch

FIG 5.

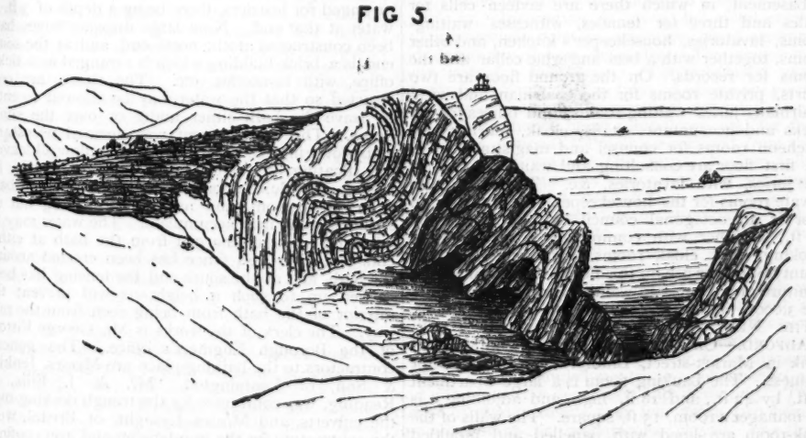


Fig. 5.—Contorted Strata, with Caves, Stair Cove, Dorset.

taken this year of the contorted Purbeck rocks on the coast of Dorset. The action of the sea, combined with other agents of denudation, have succeeded in wearing away two holes in the hard rocks. The Portland beds occur beneath the disturbed Purbecks.

Other, and grander, examples of the contortion of rocks may be found in almost any mountainous region.

Inversion is where large masses of rocks have been so much disturbed by earth movements as to have been turned upside down. This structure is chiefly found in mountainous areas, as illustrated in fig. 6.* In this section, if the student follows out the black line marked *t*, representing the Triassic beds, for example, and especially in its

FIG 6.

Fig. 6.—Section showing Inversion south of Lake Wallenstadt, Cantons Glarus and St. Gall.

e. Eocene. *c.* Cretaceous. *wj.* White Jura beds.
bj. Brown Jura beds. *t.* Trias. *s.* Schistose rocks.

relation to *bj*, he will perceive that in some parts of its course it is completely inverted.

Faults are dislocations in rocks, and necessarily vary much in point of importance; a bed may only be dislocated vertically for a few feet, or whole formations may be broken through and displaced to the extent of many thousands of feet, depending on the magnitude of the movements causing the rupture. The detection of faults is an important part of the work of the practical geologist, who is often able to inform the quarry owner or mining agent of the whereabouts of a valuable stratum which has suddenly disappeared by faulting, on being worked into. The extent of faults is also an important factor in many water-supply questions.

OBITUARY.

MR. ROBINSON CORNISH.—The death is announced of Mr. Robinson Cornish, the senior member of the firm of Cornish & Gaymer, builders and contractors, of North Walsham, Norfolk, and John-street, Adelphi. He died suddenly at the age of seventy-three, on the 20th ult., after a few hours' illness, having transacted business all day on the 18th ult. at his works in North Walsham. He carried on the restoration and building of a large number of churches, amongst which may be mentioned Bristol Cathedral and the Abbey Gate House, portions of Canterbury Cathedral, Emmanuel College, Cambridge, and St. Nicholas Church, Yarmouth, under Mr. Pearson, R.A.; Southwell Cathedral, and many church restorations under Mr. Christian; also Selwyn College Chapel, under Sir A. W. Blomfield, A.R.A.; Woodbastwick, Holbrook, Mannington, Gunton, Weston, and Woldringfold Halls, Castle Malwood, Holland House, and the new dental schools at Guy's Hospital under well-known architects. His long experience as a builder enabled him to carry out successfully the most difficult works in connexion with church restoration.

* Geikie's "Text Book of Geology," 1882, p. 518.

GENERAL BUILDING NEWS.

NEW CHURCH IN LEYTONSTONE.—The new church in Leytonstone is now almost completed. It is early English Gothic, and is built externally of red brick with Bath stone dressings and slated roofs. The chief feature in the front is the fine triple-light window with tasteful mullions and tracery. Under this is the central doorway, giving access to a spacious porch, lighted on each side of the door by little window arcades. At one end of the porch a stone staircase leads to the gallery, and at the other end is a cloak-room. Internally the walls are faced with the best yellow brick, relieved with red brick bands and arches, all neatly pointed. The line of the nave, unbroken by pillars, is continued across the opening of the transepts by two pointed arches supported by granite columns. The church consists of a nave and two transepts. The length is 79 ft., and the breadth 37 ft., increased to 60 ft. between the transepts. Sitting accommodation is provided for 496. The architect is Mr. William Wallace, and the builder, Mr. Coxhead, of Leytonstone. The total cost is 4,200*l.*

HOLY NATIVITY CHURCH, KNOWLE.—The decoration of the panels in the arcading round the chancel has now been completed. The design consists of a series of angels with musical instruments on a diapered gold background, the draperies being in rich but subdued colouring. The panels in which these are set are formed with a conventional design of ornament in harmony with the architecture of the church. The work has been carried out by Messrs Joseph Bell & Sons.

WALTHAMSTOW PUBLIC LIBRARY.—At a meeting of the Walthamstow Local Board, held at the Town Hall on the 22nd ult., the Library Buildings Committee recommended that the plans prepared by Mr. J. Williams Dunford, architect, of London, for the new Public Library (first portion) should be adopted. After some discussion this was agreed to. On the approval of the Local Government Board being obtained the work will be proceeded with. The plans are now on view at the Town Hall.

ASHTON-ON-RIBBLE, PRESTON.—On the 28th ult. a new Wesleyan Chapel was opened. It is in the Gothic style, cruciform in plan, and is built of brick, faced externally with Accrington patent bricks and Longridge stone dressings. The organ chamber is placed over the vestry, with a room for the choir. A cellar for heating apparatus is formed under a portion of this vestry. On the west corner are a tower and spire 90 ft. high. The total accommodation is for 600 persons. The cost of erection has been about 3,200*l.* The heating apparatus and ventilation combined were supplied by Messrs. Seward & Co., of Lancaster. Mr. James S. Baldwin, of Preston, was the general contractor, and the sub-contractors were:—Bricklayer, Messrs. Colley Bros.; mason, Mr. T. Sparling; flagger and slater, Mr. Bradshaw; plasterer, Mr. Geo. Arrowsmith; and plumber, glazier, gasfitter, and painter, Mr. F. Marsden. Mr. W. Barrow is the architect.

BIRMINGHAM.—A number of villa residences are in course of erection at Edgbaston, the most important suburb of Birmingham. Each has three large reception-rooms, wide entrance-hall and vestibule, good kitchen, scullery, cellars, necessary outbuildings, eight bed-rooms, store-rooms, bath-room, &c. The style is Gothic, ornamental woodwork, stone-work, stone-carving, and other decorative features being introduced. The total cost of erection will be about 1,000*l.* each. The contractor is Mr. Edward Airey, of Gillott-road, and the architect Mr. J. Statham Davis, of Sparkbrook, both of Birmingham.

REBUILDING OF CHERKLEY COURT, LEATHERHEAD.—Cherkley Court, Leatherhead, the magnificent residence of Mr. Abraham Dixon, which was recently destroyed by fire, is now being rebuilt as quickly as circumstances will allow. Cherkley Court was before the disastrous fire which broke out in consequence of the house being struck by lightning, one of the finest residences in the south of England, and commanded a varied and extensive view over the Mickleham, Box Hill, and Ranmore country. The main part of the house was utterly destroyed by the fire, and almost the only part saved was the fine conservatories, which were practically uninjured. The rebuilding has been commenced, and is now being rapidly pushed forward. The work has been entrusted to Messrs. Hollands & Hannen, of London. The plans for the restoration of the house have been prepared by Mr. Chambers, architect. A careful examination of the burnt-out building revealed the fact that some of the walls of the house would have to be taken down, though a great part of them were uninjured by the fire. It is hoped that the work will be completed by the end of May. A large staff of men are working day and night to repair damages, the electric light, with which the house was fitted, being used for the night work.

PROPOSED NEW SCHOOL, BARRY.—A site has been chosen for the erection of the proposed new building for the Barry Intermediate School. The plans provide accommodation for seventy boys and thirty girls, and have been prepared by Mr. W. H. Dashwood Caple, architect, Cardiff. The walls of the new building will be built of local bricks, faced with Cattybrook red bricks, and relieved with Corsham Down stone and buff and blue terra-cotta

bands, best Memel timber being used for constructional purposes throughout. The elevations are designed in the Elizabethan style of the English Renaissance period of architecture. The cost will be about 2,500*l.*

Runcorn.—The congregation of St. John's Presbyterian Church, Runcorn, have decided to erect a new place of worship and Sunday school in Victoria-road. The plans submitted by Mr. T. W. Cubbon, of Birkenhead, have been accepted. The probable cost, including site, is put down at 4,500*l.*, and Mr. W. H. Bleakley, builder, Birkenhead, has been given the contract.

Improvements at the Guildhall.—The City Commission of Sewers have resolved to erect, at an expenditure of about 36,000*l.*, new business premises on the sites of the City Chamberlain's Office and the present Weights and Measures Office, at the Guildhall. We understand, too, that the Corporation are carrying out a scheme for re-arranging the civic offices, which in many respects are inconvenient, and for re-decorating the Council Chamber designed by the late Sir Horace Jones, and illustrated in our columns of December 1, 1883. The old Cash and Freedom offices, and Exchequer, or Mayor's, Court (built 1425), together with the Aldermen's court-room—its ceiling painted by Sir James Thornhill—have been pulled down during the alterations begun ten years ago.

St. Oswald's Church, Small Heath, Bordesley.—The new church of St. Oswald, Small Heath, which is designed to serve a district populated by about 7,500 souls, which has been carved out of the parish of St. Andrew, Bordesley, was consecrated by the Bishop of Coventry on the 27th ult. The church was designed by Mr. W. H. Bidlake, M.A., architect, of Birmingham. It consists of a chancel with transeptal chapel, organ chamber, and vestries attached, and a nave and aisles of four bays, which it is intended to enlarge at some future time by the addition of two bays at the west end, with public entrance lobbies and a tower and spire. The organ chamber and clergy vestry are placed on the north side of the chancel, and on the south side is the transeptal chapel and choir vestry, the two vestries being connected by a passage behind the altar. The style, broadly speaking, is that of the transition from Early English to Geometrical Decorated, adapted to the materials employed, which are Leicester sand-brick with Bath stone facings and plain russet-brown tiles. The chancel arches reach the entire height of the building. The piers and arches of the nave are of Hollington stone and richly moulded brick. The clearstory, lighted by two-light windows with stone mullions and bar tracery in the heads, is very lofty, and is surmounted by an open timber roof covered with boarding of unstained pitch-pine. The sculpture, employed chiefly about the chancel and Morning Chapel, deserves notice. On the north side of the chancel arch supporting the hood-moulding, is a corbel representing St. Oswald, Bishop of Worcester, who died in 992. On the south side is portrayed Bishop Philpott, the founder of the church. In the Morning Chapel is a delineation of St. Dunstan, and other heads are sculptured on corbels carrying the chancel roof. Beneath the east window, with its detached clustered columns and moulded arches, appear seven angels supporting shields, which bear the emblems of the Passion. The chancel, which is approached by three steps, is paved with plain red Ruabon tiles, the seated portions being floored with wood blocks set over cement. The church is seated throughout in pitch-pine, stained a dark green bronze, in harmony with the red brick lining of the walls. At present the accommodation is about 450 sittings, exclusive of the choir. The gas-pendants are of wrought iron, fitted with Stott & Co.'s reflector lights. The whole of the work has been carried out by the contractor, Mr. T. Rowbotham, Small Heath.

St. Paul's Church, Walsall.—Last week the new church of St. Paul's, Walsall, which has been in course of erection during the last eighteen months, was consecrated by the Bishop of Lichfield. The plans have been prepared by Mr. J. Loughbrough Pearson, architect, London, and the work has been done by Mr. Willcock, contractor, of Wolverhampton. The cost will be about 10,000*l.* The church is spacious and lofty, of early fourteenth-century character, somewhat curtailed in length, in consequence of the exigencies of the site. There is accommodation for 850. The nave is 80 ft. long and 26 ft. 6 in. in width, with wide aisle, giving a total breadth across nave and aisles of 66 ft. It is divided into five bays, the eastern ones, which are a little wider than the others, opening with comparatively low transepts. The chancel has an apsidal termination, and is 38 ft. long and 22 ft. wide, with small side chapel to the south of it, and a double aisle on the north side, over which is provision for an organ. The vestries, not yet erected, will be east of this. The entrances are north and south, in the western bay, through a shallow porch on the north side, and through the tower on the south side. The roofs are of simple character. Open timber framing for the nave and aisles, and arched and boarded ceilings to the chancel and chapel. The height of the nave and chancel-walls is 40 ft., and 60 ft. to the ridge of the roofs. The aisles are upwards of 30 ft. high. The arcades have a lofty proportion, the clearstory stage being low, and with small narrow windows. The windows of aisles and transepts are large and richly traceried, and the west window of the nave is especially to be noticed for its size and elaboration. The chancel windows, seven in number, are of two lights and of very lofty proportion, contrasting with the smaller windows of the chapel below. The walls are of coursed stonework; all dressings are of local stone. The roofs are covered with slates. The tower, the lower stage of which is now being commenced, will be 20 ft. square, with boldly projecting buttresses, and with a lofty belfry stage, and is to be surmounted by a stone spire, with angle pinnacles and tall spire lights, the total height of the tower and spire being about 160 ft. Internally the walls are plastered, the floors are laid with tiles.

Hutchestown Free Church, Glasgow.—This new church is in the Late Decorated Gothic style. The main gable fronts Dixon-avenue, and rises to a height of about 60 ft. between two broad buttresses with moulded intakes. The lower portion of the gable has two three-light traceried windows, and over these two large and deeply-moulded windows of four lights each, with heads filled with tracery, occupy the full width of the gable between the buttresses. Above there is a low-pitched gable with panelled flanks, and a canopied niche with a sculptured corbel under it, and a foliated cross over forms the terminal feature. On the east side is the hall entrance, and the gable of the hall buildings with a five-light window complete the northern elevation. The principal entrance is elaborately designed. The porch within is finished in stonework, with tiled floor and wood-panelled ceiling. Immediately behind this porch is an octagonal staircase turret. In the turret is an open chamber for a peal of bells. The organ-chamber is carried beyond the church in chancel form, with dwarf traceried lights high up in the side and walls. Internally the plan shows a wide and lofty nave, with broad side aisles divided from the nave by massive moulded stone arches of very wide space, supported on clustered columns of polished Labrador syenite. The principal construction of the roof is exposed, and the ceilings lined and panelled in wood, stained to a dark oak tint. In the organ-chamber is a handsome stained glass figure window to the memory of the late Dr. Patterson. Besides the church proper there is a suite of rooms for congregational work. The architect is Mr. John B. Wilson, A.R.I.B.A. and I.A., and Mr. D. Forbes has acted as clerk of works. The following are the contractors for the various departments:—Mason, R. M'Cord & Son; wright, W. Cowan & Son; slater, R. Harris; plumber, Cairns & Laing; plasterer, Jos. Graydon; gas-piping, H. Buchan; gas-fittings and porch gate, Milne & Son; railings and gates, M'Callum & Hope; painters, A & J. Scott; glazier, Miller & Steele; stained glass, Jos. Miller; heating, Cormack & Son; upholstery, F. Smith; and carving, Dawson & Sherriff.

The New Middlesex Guildhall and Courts.—The Middlesex County Council and Court of Quarter Sessions have now taken possession of the new offices which have been erected on the site of the old Middlesex Sessions-house in the Broad Sanctuary, Westminster. The new buildings, which have been erected from the plans of Mr. Pownall, the County Surveyor, by Messrs. Higgs & Hill, at a cost of nearly 20,000*l.*, are built of red brick, with stone facings. The building consists of a basement, in which there are sixteen cells for males and three for females, witnesses' waiting-rooms, lavatories, housekeeper's kitchen, and other rooms, together with a beer and wine cellar and the rooms for records. On the ground floor are two courts, private rooms for the chairman and vice-chairman, juries' waiting-rooms, and offices for the clerks and accountants' staffs, cloak, retiring, and luncheon rooms for counsel and magistrates. On the first floor are consulting and waiting-rooms for the juries, with lavatories, &c. There are also private rooms for the housekeeper. On the second floor is an octagonal council chamber, 36 ft. by 36 ft., together with committees' ante, reading, smoking, and cloak rooms. The offices of the County Surveyor are on this floor. The fittings and furniture are of oak and walnut, and cost something like 3,000*l.*, in addition to the cost of the building.

The New London and Midland Bank, Bradford.—On Monday the London and Midland Bank in Market-street, Bradford, was opened for business. The banking room is a large apartment 28 ft. by 42 ft., and 18 ft. high, and adjoining it is the manager's room, 13 ft. square. The walls of the bank-room are lined with panelled and moulded mahogany up to a height of 6 ft. Reaching from the top of the dado to a rich plaster frieze is a lining of Pavonazza marble, banded with Siena marble. A very rich plaster ceiling, painted and gilded, has been put in, the floor is done in mosaic and wood block flooring, and the bank fittings are of mahogany, finely carved. The room is well lighted by day, and fitted with forty-five 16-candle power electric lights for times of darkness. On the first floor there is a suite of offices, and the second floor is arranged in a similar way. The top stories are set apart for the caretaker. The contract for the work generally was let to Messrs. William Ives & Co., but the architect, Mr. James Ledingham, made a number of sub-contracts. The granite was supplied by the Great North of England Granite Company, Peterhead; the marble work and mosaic by Messrs. J. & H. Patteson, of Manchester; the wrought-iron and metal work by Messrs. Elwood, of Leicester; the electric-light installation by Messrs. Rosling & Matthews, of Bradford; the electric-light fittings by Messrs. Hunt, of Birmingham; and the cabinet work was done by Messrs. Charles Mills & Co.

SANITARY AND ENGINEERING NEWS.

Disposal of Town Refuse.—At the Rochdale Sanitary Works a new process is being tried. The apparatus is worked on the blast furnace system, the refuse being charged from the top, and as it gets lower down the combustible matter is converted into gas, and the other matter reduced to a liquid state, and taken from the furnace as molten slag. The gas which is so generated can be conducted to any part of the works and utilised for any useful purpose, while the slag is of the smallest possible bulk obtainable from the amount of refuse treated. The experiment so far shows that it is possible to convert the slag into building blocks, concrete, asphalte, and paving blocks.

The Water Supply of Glasgow.—The drainage area at Loch Katrine is 74·8 sq. miles. Loch Katrine is 367 ft. above the sea. The storage amounts to ninety-five days' supply. At the head of the loch the rainfall is heavy, frequently being over 100 in. per annum. The aqueduct to Glasgow is 25¾ miles long, and contains 550 million gals., or a supply of 50 gals. per head for eleven days. The total cost of the works was close on one million and a-half. The new powers will allow the Corporation to duplicate the first works. When the sides of the loch were raised, they would contain 15 thousand million gals., and this will probably meet all the requirements for forty years to come.

Redruth.—On Tuesday, September 26, Colonel W. M. Ducat, R.E., one of the Local Government Board Inspectors, conducted an inquiry into the application of the Local Board for sanction to borrow 10,500*l.* for improving the water supply of the town, at the Town Hall, Redruth. The chairman of the Board, Dr. Permewan, entered into particulars with regard to the existing supply and the necessity for new works. The scheme was explained by Mr. H. Bertram Nichols, C.E., of Birmingham, the engineer, who was present with his plans and estimates. Two reservoirs were originally proposed, but the clerk stated, on account of the second reservoir being abandoned, 9,500*l.* would be required instead of 10,500*l.*; there would then be a storage capacity of 4,500,000 gallons. After the inquiry the inspector, accompanied by the chairman, the clerk, the Surveyor to the Board, and the engineer, visited the principal sources of supply, at Penstruthal and Gordon, also the site of the proposed storage reservoir at Sandy-lane and the existing sources of supply.

The Public Bathing Place, Reading.—The bathing place has been undergoing extensive alteration and enlargement, under the direction of the Borough Surveyor of Reading, Mr. Arthur E. Collins. The dimensions of the bath as now enlarged are:—Length 230 ft. and breadth 60 ft., giving a water area of 1,400 square yards. There is an ample depth of water in the bath, the bottom, which consists of 6 in. of concrete, having a gradient of 1 in 65. The south end of the bath is especially arranged for learners, there being a depth of 3 ft. of water at that end. Nine large dressing-boxes have been constructed at the north end, and at the south end is a brick building which is arranged as a ticket office, with lavatories, etc. The sluices are constructed so that the water may be allowed to enter or leave the bath either under or over the sluice doors. This arrangement was deemed necessary, as by lowering the sluice-door it will allow all leaves, etc., floating on top of the water to run off. By raising the sluice-doors the water leaves the bath from the bottom, and assists in washing out all sediment that may accumulate. The water may be admitted to, or discharged from the bath at either end. A high iron fence has been erected around the bath, and at the south end the fencing has been carried up to such a height as will prevent the interior of the bath from being seen from the railway. The clerk of the works is Mr. George Fitton, of the Borough Engineer's office. The general contractors to the bathing-place are Messrs. Jenkins & Son, of Leamington. Mr. A. J. Ellis, of Reading, was contractor for the trough decking over the culverts, and Messrs. Lysaght, of Bristol, were the contractors for the iron fencing and iron roofing, for whom Mr. A. J. Ellis is erecting the iron roofs and screen fences. Reading may now congratulate itself on having one of the finest open-air swimming baths in the country.

FOREIGN AND COLONIAL.

France.—The Government has instructed M. Roty, the well-known medallist, to execute a commemorative medal to be distributed to all the French artists who have taken part in the Chicago Exhibition.——The new hospital at Pantin, built for the Municipality of Paris, is to be opened on November 1.——The small town of Andelys inaugurated, on September 24, a monument to the

memory of the painter Chaplin. The monument, which will consist of a bust of the eminent artist placed on a stone pedestal ornamented with a palette in bronze, is the work of M. Etienne Leroux. ——A fine Roman Mosaic has recently been discovered in a field at Flacé-les-Maçon (Saône-et-Loire). It shows a design of a square medallion enclosing a figure of a gladiator wearing a helmet and armed for combat. The mosaic is well preserved. It measures about 8 mètres by 5, and is supposed to belong to the first century A.D.——At Nimes, on September 30, was inaugurated a memorial bust of M. Paulin Talabot, founder and former director of the Paris, Lyons, & Mediterranean Railway, the bust being executed by the present engineer-in-chief, M. Noblemaire, a director himself of the company, and an amateur artist of great talent.——At Bruville (Meurthe-et-Moselle) a fine monument, designed by M. Aubé, has been erected to the memory of 880 soldiers killed at the battle of Rezonville-Gravelotte, on August 16, 1870.——The Fine Arts Exhibition at Rouen was opened on September 30.——The Consul-Général of Vaucluse has opened a public subscription to erect a monument to the memory of Gambetta, at Caraillon. ——It is announced that M. Thorrand, a large contractor and manufacturer of cement at Voreppe, has been granted the decoration of the Legion of Honour. M. Thorrand contributed largely to popularise the use of cement in public works in France.——The jury of the competition opened at Médéah for the construction of a group of schools and a covered market have awarded the first premium to M. Laillet, "engineer-architect," of Amiens, and the second to MM. Bourgeois of Passy and Cave of Paris, architects.——The death is announced at Philippeville (Algeria) of M. Albert Ribaucour, engineer in chief of "Ponts et Chaussées" and a distinguished geometer, to whom we owe the construction of the Saint Christophe Basin in the Bouches du Rhône. The syphon system which he contrived for the carrying out of that work gained him a medal of honour at the 1889 exhibition.——M. Ernest Guillaume, member of the "Société des Architectes de Saône et Loire," has died at the little town of Saint-Claude (to which he was architect) at the age of forty-five.——The church of Quillebœuf has been entirely destroyed by fire, the work apparently of an incendiary.——The jury of the competition opened by the town of Nice for a monument to commemorate the annexation of the Nice province to France has awarded the first premium to MM. Allar (sculptor), and Jules Febvre (architect), of Nice; the second premium to MM. Lombard (sculptor) and Redon (architect), of Paris; the third to MM. Dame (sculptor) and Breffendille (architect), also of Paris.——M. Henri Degré, architect, of Dijon, has just died at Ahuy, at the age of seventy five. He was a student in the École des Beaux-Arts and in the atelier of Labrouste. For more than thirty years he took part in all the works carried on for the improvement of Dijon.——The statue of Chevreul is to be inaugurated at Angers in the course of the month of October.

DENMARK.—An international exhibition of electric motors is being held this autumn in Copenhagen, promoted by the Danish Society of Handicraft and Industry. There are twenty-three exhibitors, some German, French, and American, but no English.——The frontal figures of the splendid new premises of the Great Northern Telegraph Company of Copenhagen are being modelled by the celebrated Norwegian sculptor, Herr Stefan Sinding. They were recently described in our columns.——The Copenhagen Telephone Company has decided to erect new central premises for the accommodation of about 10,000 subscribers. The principal hall will have a length of 140 ft., and a breadth of 40 ft., with a vaulted roof and lighted from above. It will be equipped with every modern appliance of telephony.——It has been decided to erect two new national schools in Copenhagen, at an aggregate cost of about 250,000 kr., the principal interest in them being that experiments are to be made with gas stoves for heating instead of coke and coal stoves, as the former have been found to answer very well in other municipal buildings.——The fundamental works of the new Copenhagen Town Hall are now rapidly progressing, the excavations, &c., having been completed.——A great and interesting engineering work is now in progress in Denmark, viz., the construction of a great breakwater at the Hirshals Lighthouse, facing the North Sea. The contractor is Herr Kirk, who has great experience in this kind of work,—— The restoration of the old Copenhagen monastery, the Helligaandskirke, is progressing favourably under the direction of Professor Storch. In the interior the plaster of the walls is being removed, exposing the original red stonework. A number of old Mediæval windows have been reopened. It is intended to use the refectory in future as a church. ——The report of the Aalborg Portland Cement Works for 1892 shows that very good progress is being made, the article now turned out being equal to Stettin cement, "which," says the report, "is far superior to any English brand." Danish cement now finds a ready sale at home, in Scandinavia, Russia, Germany, and even North America.

SWEDEN.—The municipal authorities of Stockholm have voted a sum of 340,000 kr. for the erection of an asylum for the insane poor, and 50,000 kr. for extraordinary cholera precautions.——The work of establishing an Industrial Palace in Stockholm, *i.e.*, a permanent exhibition of Swedish industries and arts, has now been completed. The building has been designed by Herr G. Lindgren and Herr Möller, architects. It is situated on the Avenue Karlavägen, and was commenced twelve months ago, but a fire in May last delayed the work. The cost is 140,000 kr. The building is circular in shape, with winter gardens and a restaurant attached. The interior is lighted from above at night with Welsbach glow lamps.——A recent issue of the only Swedish sanitary organ, the *Helsovänn*, contains an article by Professor E. Almquist, a well-known sanitary reformer, on the great importance of the filling used between floors in dwellings as regards health in Sweden, where old ground mortar is generally used for filling the space between the beams of floors so as to arrest noise, and retain heat. Professor Almquist considers such *débris* highly dangerous to health, inasmuch as they contain sometimes upwards of one-half per cent. hydrogen and an equal volume of chloride or seven-and-a-half kilos per cubic mètre. In addition, there is the large quantity of dirt found in this stuff. He fears that many cases of diphtheria, typhus, typhoid fever, and lung disease have been caused by the impure fillings of the floors. In hospitals, of course, the dangers are much greater. To the latter the author suggests the adoption of cement floors, covered with linoleum for warmth's sake, such as is the case in Berlin and Hamburg, or, better still, asphalte; but as this material is not attractive by its colour, it might be plugged with wooden blocks in neat designs, such as is the case in the new Gothenburg Hospital.——"Kärnan," at Helsingborg, a striking object at the entrance to the Sound, an old historical ruin of a Viking stronghold, in the shape of a huge square tower, is to be restored by the Crown at a cost of 15,000 kr.

BRUSSELS.—The Triennial Art Exhibit has been opened by the King. Its site is on the ground formerly occupied by the old Law Courts, the exhibits being housed in provisional buildings of the simplest kind. The show was organised by the King with the assistance of the Home Secretary and a managing committee of artists and laymen, the "hanging jury" consisting partly of members of the committee and partly of delegates of the would-be exhibitors. The excellent catalogue published by Mr. Lyon-Claessen contains 1,250 numbers, including some referring to public monuments not within the exhibition halls, which could, however, be entered for the diplomas and medals according to the special conditions for sculptors. The exhibition closes on October 30.

MISCELLANEOUS

DECORATIVE ART SCHOOL IN FLORENCE.—According to a recent report of the United States Consul at Florence, a decorative art school under the patronage of the King of Italy was established in that city on October 23, 1889. It is supported by an unlimited number of shares at 9s. 7½d. each per year; voluntary donations; yearly payments of 8s. per pupil; subsidies granted by the Florence Chamber of Commerce, the ministry of agriculture, commerce, and industry, the municipality, &c., and by other donations amounting to a total sum of 1,103*l.* 5s. Instruction is given in architecture, artistic ironwork, painting, sculpture, wood carving, and decorative design generally. The course of study lasts for four years. The scholastic year extends from September to July. Lessons are given daily for four hours in the morning, attendance for the first three hours being compulsory, and for the fourth hour, optional. Pupils are received from the age of twelve years. The pupil, having fully completed the course of instruction and training, and after successful examination, is granted a certificate *ad hoc* specifying his attendance. The institution is at liberty to retain any part or the whole of the work produced by the pupils. The professional school of industrial decorative arts in Florence proposes to give artistic and technical instruction adapted more to the development of Florentine industries based upon the arts of drawing and modelling. The school is, therefore, more especially intended to give a training to young men in these two accomplishments, as applicable to all and any industrial decoration and designing. The course of study extends over four years, two being for elementary or preparatory classes, one for intermediate or special training, and the remaining year for advanced or practical work. The number of industrial pupils for the year 1892 was 127.

BROCKWELL PARK.—A monument to the late Mr. Thomas Lynn Bristowe was inaugurated in Brockwell Park last Saturday. It consists of a bust of the deceased, over life size, mounted on a high pedestal with ornate capital. On the front of the pedestal stands in full relief a life-size figure of "Perseverance" presenting a branch of laurel; in the base under the statue is a bronze panel, gilt, of children at play. This pedestal stands on a massive plinth, with a projecting drinking fountain of elliptical form in front; at the back is a metal door enriched with a labyrinth to amuse the children. The entire memorial stands about 16 ft. high and is constructed throughout of white mountain limestone. The work was designed by Mr. W. Brindley and has been executed by Messrs. Farmer & Brindley. The figure sculpture being modelled by their artist, Mr. L. Chavalliand.

A TRIBUTE TO THE MEMORY OF BURNS.—A statue of Robert Burns, erected in the Free Public Library of Belfast, as a tribute to the memory of Scotland's national poet, was unveiled on Tuesday, the 19th ult., in the Art Gallery of that institution, in the presence of a numerous assembly, and, as a work of art, is deserving of commendation. It stands about 7 ft. in height, and is by George A. Lawson, H.R.S.A., and cast in bronze from the model prepared by that gentleman for the colossal statue of Burns unveiled at Ayr in 1891. It is erected upon a polished pedestal of red granite. The pedestal bears the following inscription:—"Robert Burns, 1759–1796. Presented by his countrymen and admirers in Belfast."

UNIVERSITY COLLEGE.—The customary free opening lectures at the University College, London, will begin on Tuesday evening, the 10th inst., at 7.30 p.m., by Professor T. Roger Smith, who has chosen for his subject, "An Architect's Books," a subject on which there is a good deal to be said which ought to prove interesting to students. The classes begin work the same and the following week. The classes for Architectural and Structural drawing, maintained by the Carpenters' Company, are also resuming work at this college.

BOROUGH POLYTECHNIC INSTITUTE.—The classes in this Institute which is intended for giving technical education at a low rate, include Art classes in Freehand Drawing, Modelling, Perspective, &c., and special classes on Elements and Principles of Ornament. The Science classes include Building Construction, Applied Mechanics, Technical Drawing, &c. Under the head of "Technical and Trade Classes" instruction is given in Carpentry, Brickwork, Plumbers' Work, and Builders' Quantities. Woodcarving and Modelling are also taught.

TRADE CATALOGUES.—Mr. Archibald D Dawnay's catalogue of constructional steel and iron work contains, besides a number of sections of girders, a useful and minutely drawn section of a public building recently erected of constructional steel-work and fire-proofing. From Mr. F. A. Fawkes we have a very handsome illustrated catalogue of the wooden chimney-pieces, overmantels, panelling, &c., made at his joinery works at Chelmsford. These are mostly in very good taste, and superior to the average of stock designs.

NEW CONCERT ROOMS IN LONDON.—It is expected that the Queen's Hall (originally named Victoria Hall), will be opened in the course of this month. The premises have been built upon the east side of Langham-place, at the corner of Riding House-street, and opposite Nash's Church of All Souls. It will have a capacity of 3,000, with an orchestra for a band and a choir of 500 performers; the organ is by Messrs. Hill. On February 14, 1891, we published a perspective view of the elevation and plan, on street level, with a description. From some correspondence which was printed subsequently in our columns it appears that plans and designs were prepared in 1887, by Mr. C. J. Phipps and Mr. T. E. Knightley, as joint architects; whilst the architecture, within and without, the acoustic arrangements, external loggias, and construction are by Mr. Knightley. The rebuilding of Messrs. Erard's premises in Great Marlborough-street, will include a recital hall, for 400 seats, on the first floor, and additional show-rooms for the pianos.

PATRINGTON, EAST YORKS.—A new turret-clock has just been erected in St. Patrick's Church which shows the time upon three external dials, and strikes the hours upon the largest of the five bells in the tower, the work having been executed by Messrs. William Potts & Sons, Leeds.

IMPROVED WASHHAND TROUGH.—Messrs. Emley & Sons, of Newcastle-on-Tyne, send us an illustration and description of their marble washhand trough, in which a continuous supply of water is admitted from a pipe beneath the water level, placed at the back of the trough and discharging towards the front; a continuous wave is thus formed from back to front and returned from the front to a weir at the back of the basin, lower than the front edge, over which the water escapes. The object is to keep the water in the trough constantly in motion and to carry off the used water continuously. Soap-boxes are fixed at intervals over the trench at the back into which the weir discharges. The trough seems well adapted for schools.

BIDSTON HILL PARK, BIRKENHEAD.—The threatened appropriation or disposal of Bidston Hill for building sites some time back caused much alarm and annoyance to the inhabitants of Birkenhead, Tranmere, and vicinity, by whom the hill was much used. Steps were taken and a committee appointed to see if anything could be done towards saving some part of the large open space for the use of the public. The efforts of the committee have been successful, and the larger of two proposed schemes will be carried out. At a meeting of the general committee of the Bidston Hill Purchase Fund, on September 26, it was stated that a provisional agreement had been come to between the owner and the purchase committee, by which the latter had acquired an area of from 46 to 47 acres of the summit of the hill, extending from the Park

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
Baptist Chapel, Schools, &c. Stafford	Committee	.....	Oct. 31
*Police Offices and Cells	Colchester Corp.	..... do.	
*Moveable Road Bridge over River	Flintshire C.C.	100*l.*	Dec. 1

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Road Works	Cheshunt Local Board	S. Towlson.....	Oct. 9
Road Works, Ashton-on-Mersey, Cheshire	Altrincham R.S.A.....	J. McKenzie.....	Oct. 10
Sewering, Levelling, Paving, &c.....	Bowdon Local Board..	J. Newton & Son.....	do.
Street Works, Knowles-street, Dudley Hill, near Bradford.....	Tong Local Board	M. Outhwaite	do.
Street Works, Armoury-street, &c.	Stockport Corporation	J. Atkinson	Oct. 11
Main Sewer	do.	do.	do.
Sewerage Works, Gatley-road, &c.	Cheadle and Gatley Local Board	E. Sykes.....	do.
Public House, Chapel-end, Nuneaton	P. Phipps & Co.	T. F. Tickner	do.
Well Sinking, Bride Bridge	Hastings Corporation	P. H. Palmer	do.
Bridge, Ulleswater-street	Bolton Corporation ..	W. H. Brockbank	do.
Setting Boiler, Seats, &c. Marton-street-yard	Lancaster Corporation	J. Cook	do.
House and Premises.....	Bedlington (Northumberland) Coal Co....	.....	do.
*Making-up Roads	Fulham Vestry	W. Sykes	do.
Stables, &c. Frizinghall, Bradford, Yorks.	.....	Parkinson & Miall....	Oct. 12
Additions, &c. to Lock-up, Barnsley.....	West Riding C. C.	J. Vickers-Edwards ..	do.
Paving, Kerbing, &c. High-road, Earlsheaton, Yorks	Soothill Nether Loc. B.	M. Paterson	do.
Bridge, Springwell, Harefield	.....	Chas. Brown.....	do.
Farm Buildings, Langford Hall, Essex....	A. Lomas	P. M. Beaumont	Oct. 13
Pair of Semi-detached Villas, Moorhead-lane, Shipley, Yorks	.....	Fairbank & Wall.....	do.
*Alteration to "The Duffryn," near Cardiff.....	J. Cory	E. A. Lansdowne	Oct. 14
Two Schools, Classrooms, &c. Wye, Kent.,	Governors	.....	do
*Sewerage Works.....	Hendon Local Board..	S. S. Grimley	Oct. 16
*Making-up Roads, &c.....	Windsor R.S.A.	W. Menzies	do.
School Buildings and House, Potter Heigham, Norfolk	.....	A. S. Hewett	do.
Sanitary Pipes, &c.	Ramsbottom (Lancs.) Local Board	A. W. Smith	do.
Sewerage Works, Heaton	Bolton R.S.A.	Mr. Atherton	do.
*Cottage, Sutton	South Metropolitan School District	E. W. Crickmay	do.
*Engineering Work	Poplar and Stepney Sick Asylum Dst. ..	A. & C. Harston	Oct. 17

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Nine Houses and Outbuildings, Hemsworth, Wakefield	Barnsley British Co-op. Soc. Ltd.	Senior & Clegg	Oct. 17
Drainage Works	Ulverston R.S.A.	J. Greenwood	do.
Residence, Sutton (Yorks).....	.....	S. Jackson	do.
Granite Road-Metal (600 tons).....	Dover Town Council ..	*Official*	do.
*Road-Making Works	Bromley Loc. Bd.	do.	do.
*Earthenware Drain Pipes	Boro of Croydon	do.	do.
*Building Materials	do.	do.	do.
Water Supply Works	Ebbw Vale Loc. Bd. ..	T. J. Thomas.....	Oct. 18
Granite Road-Metal (375 tons)	Shirley and Freemantle Loc. Bd.	H. J. Weston	do.
*Road-Making Works	Sutton (Surrey) L.B. ..	A. D. Greatorex	do.
Purifying, and Lime-House, Ripon-road ..	Harrogate Gas Co.	T. Newbigging.....	Oct. 19
*Enlarging Post Office, Bolton	Com. of H. M. Works	*Official*.....	Oct. 20
Granite Road-Metal (700 tons)	Bishop Stortford Loc. Bd.....	do.	Oct. 21
*Sinking, &c. of a Well.....	Bilston Imp. Com. ..	B. Latham.....	do.
*Board School	Rodbourne Cheney Sch. Bd.	W. Drew	do.
*Workmen's Dwellings.....	Richmond T.C.	*Official*.....	Oct. 23
*School Furniture	Walthamstow Sch. Bd.	do.	Oct. 24
*Bridge over Railway, Cornwall	G. W. R. Co.....	do.	do.
Waterworks and Sewerage, Helmsdale, N.B.	.....	J. Fraser	Oct. 25
Additions to Asylum, Armagh	Com. of Control	*Official*	do.
*New Baths	Hackney P.B. & W. Com.....	Harnor & Pinches ...	Oct. 26
*School	Wolverhampton Sch. Bd.	T. H. Fleming	Oct. 27
*Sewerage Works, &c.	Lewisham Bd. of Wks.	*Official*	Oct. 31
Cottages, Terraces, &c, St. Helen's, Isle-of-Wight	Gen. Calthorpe.....	Davey & Salter.....	No date
Pipe Laying (4,000 yds.) Royston (Yorks)..	.....	F. Kesteven	do.
*Erection of Buildings	British Explosives Syndicate	E. N. Cubitt	do.
*Children's Cottage Homes, &c.....	Sheffield Union	C. J. Innocent	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*Foreman of Works Gold Coast.....	Crown Agents for Colonies	250*l.* to 300*l.*	Oct. 16
*Estimating and Measuring Clerk	London County Council	250*l.*	do.
*Assistant in Works Department	do.	200*l.*	do.
*Architectural Draughtsman.....	do.	3*l.* per week	do.
*Architectural Draughtsman.....	do.	2*l.* per week	do.
*Ordering and Assistant Quotation Clerk..	do.	2*l.* 10*s.* per week	do.
*Wages' Abstracting Clerk	do.	2*l.* per week	do.
*Clerk for Jobbing Works Accounts	do.	2*l.* per week	do.
*Assistant Surveyor	Civil Service Com. ..	.....	Oct. 18

Those marked with an Asterisk (*) are advertised in this number. Competitions, p. iv. *Contracts, pp.* iv., vi., viii., *and* xxv. *Public Appointments, pp.* xxiii. *and* xxv.

Cottage to Upton-road, with a strip 150 ft. wide from the wall on the west side, for the sum of 12,100*l.* Of this amount, 9,749*l.*, including 5,000*l.* from the Corporation of Birkenhead, had been collected, leaving, with legal and other expenses, 2,500*l.* to be raised. The inhabitants of Birkenhead and Liverpool, with the latter of whom especially the hill was a favourite resort, are to be congratulated, because, if they had allowed the opportunity of acquiring the site to pass, they might not have another.

KING'S COLLEGE. — We have received the prospectus of classes and lectures at King's College for the ensuing term. The day classes are intended to furnish full information on the theory and practice of architecture and building construction, and in the application of the principles of mechanics to construction. The Monday lectures by Professor Banister Fletcher will deal with the subjects of Architecture, and its History; Foundations; Brickwork; Building Stones; Timber, its several forms and uses; Iron, and its Use in Building; Materials, strengths, stresses, and strains; Limes, Cements, and Concrete; Masonry; Fireproof Construction; Carpentry (roofs and their constructions); Plastering and Materials; Plumbing and Sanitation; Shoring; and Model Bye-Laws.

A WARNING TO BUILDERS.—Mr. Clarke was summoned at the Worship-street Police Court on Tuesday last as the builder who had commenced the erection of a very large warehouse building without giving notice to Mr. Henry Tonegrove, District Surveyor of South Islington and Shoreditch. The magistrate, Mr. Rose, ordered a penalty of 5*l.* and costs.

KIRKSTALL ABBEY.—A large party of antiquaries and others interested in the relics of the past betook themselves to Kirkstall on the 28th ult., the meeting being promoted by the Yorkshire Archæological Society. The work which has for some time been in progress at the abbey, with a view of preserving it, has been watched with anxiety by many whose keen and scientific vision has detected, or apparently detected, a spoliation of the ancient grandeur of the ruins. The members of the Archæological Society were determined to investigate matters for themselves, and very kindly extended the hand of goodfellowship to the Thoresby Society, whose members they invited to join them. Mr. W. H. St. John Hope officiated as guide, and conducted the party over the ruins and the recently-excavated portions. Assembling first in the old cloister, Mr. Hope called attention to the fact that during the past few years various changes had been made in the external appearance of the abbey, the walls of which had been rapidly mouldering away from the effects of the frosts and rain, so destructive to everything that was left exposed in this country. In all abbey ruins of the Cistercian order they would observe a distinction between parts pertaining to the monks and those used by their lay brothers. The line of demarcation was easily fixed. Taking the ground plan as a whole, the arrangement of that abbey was remarkably complete. In the centre was the cloister quadrangle, wholly surrounded. The plan of the church, too, was thoroughly complete, there being the Cistercian nave of considerable length, with its central tower, its transepts, and its choir. Mr. Micklethwaite, the architect, explained that at the time the ruins became the property of the Leeds Corporation, many parts of them were in an absolutely dangerous condition. Many people had abused them for taking off the ivy. If they had the ivy they could not have the building. If it were only ivy they wanted, they could find it on almost any old barn, but once lose a building like that abbey, and they could not replace it. The question was whether they should preserve the abbey or leave it in its picturesque but perishing condition. True, there was a good deal of new work, but the reason was that when the tower fell, owing to the failure of one of the pillars, it brought down a large quantity of masonry with it, while what remained was severely shaken. Although some measures were taken for propping up what was left, it was very little good, permanent propping being necessary. How could this be done? It was thought best to rebuild, after a fashion, the fallen pier, and turn arches on to abut the broken arcades. If they looked carefully at the pillars, which had been restored, they would notice a great many of the old stones, which, wherever possible, had been put back in their old places. What had been done was not so much with a view of reproducing what had gone as to preserve what was left. To rebuild the tower would not only be a very great and expensive undertaking, but almost a structural impossibility.

REMOVAL OF GATES AND BARS AT THE WEST END.—Mr. F. Dethridge, Vestry Clerk of Paddington, has received a letter from the London County Council stating that the obstructions in Devonport-street and Hyde Park Gardens will be removed early next month, under the provisions of the London Streets (Removal of Gates and Bars) Act, 1893. Steps are being taken with a view to the removal of gates and bars at the Marylebone-road end of Harley and other streets in Marylebone.

THE JOINERS AND CARPENTERS ON THE CLYDE. —Another dispute has arisen between the Clyde joiners and carpenters, and another lock-out seems probable. Upwards of 300 joiners are out on strike, while over 200 carpenters and joiners residing in Partick and Whiteinch, and employed at Clydebank were yesterday put on three-quarters time. All the joiners and carpenters at J. & G. Thomson's yard, except those employed on the Inman liner nearing completion, have been put on short time.

COLLAPSE OF A RHENISH HOTEL.—The newly-built hotel of the Golden Dragon, near Konigswinter, situated in one of the most beautiful parts of the Rhine, fell in on Saturday, burying in its ruins seven workmen, four of whom were killed.

THE NEW HARBOUR OF DOVER.—Extensive machinery has been put down for making the concrete blocks which are to form the base of the submarine work. Each block weighs about 20 tons, and measures 10 cubic yards. These blocks will be made at the rate of 100 per week, and the work has already commenced. Several spans of the iron viaduct have been fixed in place, and it is expected that this portion of the work will be finished by the autumn of next year. The first set of blocks will be laid from an island stage which is being constructed in the bay, and will be set by divers using either the bell or the ordinary dress. Every effort is being made to push on the work, and with favourable weather it is expected that 1,500 ft. of the new projecting arm will be finished by the end of next year.

IRON AND STEEL INSTITUTE.—The members of the Iron and Steel Institute continued their Autumnal Session at Darlington last week, and discussed papers dealing with various subjects, including coal washing, the modification of carbon in iron, and the development of iron and steel wire manufacture. Afterwards they visited several forges and steel works in the neighbourhood.

FALL OF A ROOF AT WESTMINSTER.—A serious accident, resulting in the death of one man and very serious injury to another, occurred on the premises of Mr. D. Charteris, builder, Earl-street, Westminster, on the 27th ult. A number of men were employed in one of the buildings in the yard, used as a workmen's shop, in clearing away a quantity of shoring and timber, when the roof suddenly collapsed. Two men, named respectively Davis and Ferguson, were buried, and it was a considerable time before they could be extricated. Two large beams, together with a mass of masonry, were precipitated upon Davis, and when rescued the unfortunate man presented a shocking appearance. He was immediately conveyed to the Westminster Hospital, but died within a couple of hours. At the inquest Mr. Charteris, the employer, said the flooring was constructed in the usual way about a month ago. There were in all six arches, and the whole rested on brick walls, the weight being equally distributed. There were no intervening columns

inside the building, which was 47 ft. in extent. The usual time for cement to dry was about a fortnight, and that time had been allowed. The roof, which weighed seven tons, rested on iron girders, which, in turn, stood on joists. All the material was quite new. On the day of the accident he saw a crack in the first arch. He attributed that to wet getting in, and he at once gave instructions for the arch to be shored up. A verdict of "Accidental Death" was returned.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

17,699.—Double Door-Stop: *R. Coates.*—Between the posts of the doors is a metal box containing the mechanism, worms and levers, by which the door-stop is actuated. When the doors are opened the stops are level with the ground; but they begin to rise when the doors are within 18 inches of being closed, and eventually rise about 2 inches.

18,493.—Gullies: *E. J. Preston and W. Spinks.*—Refers to "intercepting rain-water gullies" such as are used in connexion with rain water-pipe outlets, &c. The gully is provided with a ventilated dirt-collecting box. The trap is improved in form, and when adapted to outlets for baths, lavatories, sinks, &c., a trough is provided for connexion with the outlet. This trough is fitted with a perforated cover fixed flush with the pavement or ground.

19,304.—Waste Water-Closets: *J. Kirkman.*—A kind of peaked pocket is made in the basin, and the flushing is augmented by fixing an inlet tube near the top of the basin. This tube is connected with the waste pipe of the lavatory or the bath above. Thus a top as well as a bottom flush is secured.

23,416.—Concrete Construction: *G. Maxwell.*—Concrete blocks with perforations are used. When the blocks are placed in position these perforations form channels open at the top to the interior of the building, ensuring a perfectly dry interior, preventing the passage of any moisture or dampness from without. These channels may also be utilised for housing of gas or water pipes, electric lighting wires, &c.

11,512.—Joiner's Sash Cramp: *W. C. Chappell.*—The clamps run between long parallel bars. The advantage of this arrangement is that equal pressure is obtained on both sides of the tenon simultaneously, instead of on one side as usual. Space is also left for driving the wedges, and the operation of "squaring" is facilitated.

13,079 and 13,080.—Imitations of Stone: *A. Typlt.*—Waste chips from granite or other stone are worked up in rigid moulds with magnesia in order to form slabs, &c. For marble, with which the latter specification deals, colouring matter is added and a slightly more elaborate process employed.

13,440.—Flushing Traps and Pipes: *D. Morgan.*—Water under pressure is forced into the pipes to remove obstructions, a safety-valve is employed, and back pressure prevented.

13,705.—Mounting Circular Saws: *J. Schardt.*—A holder or clamp for circular saws is used, which enables it to be inclined while the axis of the saw remains straight, thus grooves of different breadths can be cut out according as a greater or smaller inclination is given to the saw.

NEW APPLICATIONS FOR LETTERS PATENT.

September 18.—17,509, R. Crosthwaite, Fire Grates or Stoves.—17,510, T. Batty, Adjustable Support for Holding Temporary Platforms or Staging on Inclined Roofs, &c.—17,514, W. Smith, Protecting Timber Structures.—17,538, J. Moller, Syphon-flushing Cisterns.—17,558.—T. Lehmann, Process for Making Thin Partition Walls of Plaster or Cement Mortar.

September 19.—17,576, W. Hollis, Sink or other Trap.—17,591, C. Kinnell, Actuating Ventilators.—17,600, A. Gardner, Window-sash Fastener and Window Wedge combined.—17,620, A. and H. Clark, Automatic Window Silencer and Sashfast.—17,629, T. Houghton, Window.

September 20.—17,675 and 17,676, J. Crighton, Ventilating Fans.—17,679, H. Tuke, Machinery for Making or Cutting Bricks, Tiles, &c., from Plastic Clay or other Material.—17,707, F. Fifield and J. Lindfield, Preventing Smoky Chimneys.—17,710, H. Dabbs, Sanitary Drain and Sewer-pipe Joints.

September 21.—17,743, J. Rodgers, Self-acting Ball-trap for Gullet of Main Drains.—17,750, H. Tuke, Machinery for Moulding and Pressing Bricks, Tiles, &c.—17,761, R. Iddon and S. Rostron, Fixing Tiles in Stove-places and Stoves.—17,764, T. Brown, Bricks, or Blocks for Building and other purposes.—17,766, M. Rendell, Window-frames.

September 22.—17,805, J. Dean, Water-closets.—17,843, H. Kells, Clamps.—17,858, A. Boult, Surveying Levels.

September 23.—17,877, A. Goodby and J. Ball, Earth or Dry-closets.—17,893, F. and A. Bailey, Appliances for Preparing the Ends of Lead Pipes for "Jointing."—17,923, F. and L. Koerfer, Ventilators.—17,928, H. Bartlett, Waste-Preventing Cisterns and Siphons for Water-closets.

PROVISIONAL SPECIFICATIONS ACCEPTED.

14,429, A. Perkins, Repair of Asphalt Pavements and to Apparatus therefor.—15,647, J. Smith and J. Hines, Hinges.—15,970, J. Sim, Fittings relating to Casement Windows, or Doors, and to other Windows.—16,128, E. Hughes, Stone-sawing Machines.—16,470, J. Kitto, Asphalt and Lead Cement Paving.—16,611, H. Libbey, Nails.—16,843, J. Craven, Machines for Moulding Bricks, &c.—17,082, R. Dobbie, Kitchen or Cooking Ranges.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

20,082.—H. G. Watkin, Wall Papers.—20,891, R. Matthews and J. Noad, White Lead and Coloured Pigment.—20,938, J. Shanks, junior, Urinals.—1,073, A. Ford, Gully Trap.—10,974, M. Reeves, Making Doors, Shutters, &c.—15,700, W. Webb, Wood-boring Machine or Tool.

SOME RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

September 26.—By *C. Hall:* 32, Roman-rd., Old Ford, u.t. 51 yrs., g.r. 31*l.* 10s., r. 100*l.*, 68*l.*

September 27.—By *Messrs. Boyton & Pegram:* 156 to 174 (even), Dawes-rd., Fulham, f., 1,680*l.*; 9 to 17 (odd), Brunthwaite-rd., Walham-rd., u.t. 86 yrs., g.r. 26*l.* 5s., 1,000*l.*—By *Messrs. Baxter, Payne, & Lepper:* 32, 33, High-st., Bromley, u.t. 97 yrs., g.r. 90*l.*—Subject to life aged 78 yrs., afterwards 80*l.*; and a plot of f. land, 1,370*l.*—By *Messrs. Harman Bros.*: 8 to 18 (even), 21, 22, 23, 25, 27, Listria-rd., Stoke Newington, u.t. 88 yrs., g.r. 50*l.* 10s., r. 330*l.*, 2,985*l.*; 29 to 49 (odd), Listria-rd., u.t. 88 yrs., g.r. 60*l.*, r. 336*l.*, 3,095*l.*

September 28.—By *Messrs. Farebrother, Ellis, & Co.*: The f. residence "Hadley Hurst," Hadley Common, and 37 acres, 9,000*l.*; 85 and 87, High-st., Lewisham, f., area 1,790 ft., 1,800*l.*

September 29.—By *Messrs. Baker & Sons*: No. 103, Hatton Garden, f., r. 300*l.*, 6,100*l.*

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.

Greenheart, B.G.	ton	9/0/0 0/0/0
Teak, E.I.	load	9/10/0 15/0/0
Sequoia, U.S.ft.cu		2/3 2/6
Ash, Canada	load	2/5/0 3/10/0
Birch, do.		2/15/0 3/15/0
Elm, do.		3/0/0 4/5/0
Fir, Dantsic, &c.		1/5/0 2/15/0
Oak, do.		2/15/0 5/5/0
Canada		5/15/0 7/5/0
Pine, Canada	red	2/5/0 2/15/0
Do. Yellow		2/5/0 4/10/0
Lath, D'ntsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 6/10/0
Wainscot, Riga, &c., log		2/15/0 5/0/0
Odessa, crown		2/15/0 5/0/0
Deals,	Finland	
2nd & 1st std		7/0/0 9/10/0
Do. 4th & 3rd		6/10/0 7/0/0
Do. Riga		7/0/0 8/10/0
St. Petersburg, 1st yellow		9/0/0 12/10/0
Do. 2nd yellow		7/0/0 8/0/0
Do. white		8/0/0 10/10/0
Swedish		7/0/0 15/0/0
White Sea		7/0/0 15/10/0
Canada, Pine 1st		21/10/0 28/10/0
Do. do. 2nd		16/0/0 17/10/0
Do. do. 3rd &c.		7/10/0 10/5/0
Do. Spruce, 1st		8/10/0 10/10/0
Do. do. 3rd & 2nd		6/10/0 7/15/0
New Brunswick		6/0/0 7/5/0
Battens, all kinds		3/0/0 15/0/0
Flooring boards, sq., 1 in. prep. 1st		0/9/6 0/14/0
Do. 2nd		0/7/6 0/11/6
Other qualities—		0/4/6 0/7/0
Cedar, Cuba	..ft.	/4 /4½
Honduras, ..&c		/4 /4½
Mahogany, Cuba		/4 /6½
St. Domingo, cargo av.		/3 1/6
Mexican do. do.		/3½ /4½
Tobasco do. do.		/3½ /6
Honduras do.	..	/4 /5½
Box, Turkey	ton	4/0/0 13/0/0
Rose, Rio		9/0/0 20/0/0
Bahia		8/0/0 18/0/0
Satin, St. Domingo		0/0/6 0/1/3

TIMBER (*continued*).

Satin, Porto Rico		0/0/7 0/1/6
Walnut, Italian	..	0/0/3½ 0/0/7

METALS.

Iron—Pig, in Scotland	ton	2/2/3 0/0/0
Bar, Welsh, in London		5/17/6 6/0/0
Do. do. at works in Wales		5/7/6 5/10/0
Do. Staffordshire, in London		6/0/0 6/10/0
Copper—British, cake and ingot		45/0/0 45/10/0
Best selected	..	46/5/0 46/15/0
Sheets, strong	..	54/0/0 0/0/0
Chili, bars		41/5/0 42/0/6
Yellow Metal	lb	0/0/4½ 0/0/5
Lead—Pig, Spanish	ton	9/12 6 0/0/0
English com. brands		9/15/0 9/17.6
Sheet, English, 6 lbs. per sq. ft. and upwards		10/10/0 10/15/0
Pipe		12/0/0 0/0/0
Zinc—English sheet	ton	20/5/0 20/10/0
Vieille Montagne		0/0/0 0/0/0
Tin—Straits		79/0/0 79/10/0
Australian		81/0/0 81/10/0
English Ingots	..	85/0/0 85/10/0
Banca		89/10/0 0/0/0
Billiton		83/0/0 84/0/0

OILS.

Linseed	ton	21/5/0 21/10/0
Cocoanut, Cochin		33/0/0 0/0/0
Do. Ceylon		27/10/0 0/0/0
Palm, Lagos		27/0/0 0/0/0
Rapeseed, English pale		23/15/0 24/0/0
Do. brown		22/5/0 0/0/0
Cottonseed ref.		22/5/0 22/10/0
Oleine		23/10/0 24/10/0
Lubricating, U.S.		4/0/0 5/0/0
Do. refined		5/10/0 12/0/0
Tar—Stockholm	barrel	0/18/6 0/0/0
Archangel		0/12/6 0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.*]

BEDFORD.—For further works of sewering and roadmaking on the Queen's Park Building Estate, Bedford, for Mr. D. C. Preston. Mr. Richard Lund, surveyor, 8, St. Paul's-square, Bedford:—

Geo. Harrison	£826	Jesse Jackson, Leyton	*£644
Jas. Potter	736		

*Accepted.

BLACKWALL.—For the erection of a new police station, for the Metropolitan Police District. Mr. John Butler, architect. Quantities by Mr. W. H. Thurgood:—

J. Vivian	£9,031 14 0	W. Jenkins & Sons	£6,373 10 0
J. Dierden	8,180 0 0	Lloyd & Powell	6,355 0 0
J. & H. Robus	7,500 0 0	Hughes & Gotto	6,350 14 11
Norman & Son	7,130 0 0	Perrin & Long	6,325 2 6
Thos. Tilley & Sons	6,845 0 0	A. H. Green	6,250 0 0
T. J. Davies	6,775 12 1	Jas. Hayward	6,223 0 0
R. R. Facey	6,499 0 0	W. Newman	6,200 0 0
A. Kellett	6,463 16 0	Jas. Dickson, St. Albans*	6,197 10 6
B. Cooke & Co.	6,420 0 0		
H. Shardlow	6,393 2 6	*Accepted.	

BLANDFORD (Dorset).—For the water supply of the town, including well, pumping station, reservoir, water-mains, &c., for the Blandford Waterworks Company, Limited. Mr. Fredk. Beesley, engineer, 11, Victoria-street, Westminster:—

Smith & Son	£9,393	Chessum & Sons	8,473
Lathey Bros.	9,267	Holloway Bros.	8,380
S. Chafen	9,100		
Perry & Co.	8,878		

CROYDON.—For making-up, kerbing, draining, &c., streets in Merton and Mitcham, for the Rural Sanitary Authority. Mr. R. M. Chart, Surveyor, Vestry-hall, Mitcham:—

	Chestnut-road.	Nursery-road.	Fountain-place.	Norfolk-road.
E. & W. Isles, Wimbledon	£295 0 0*	£142 0 0	£81 0 0*	£326 0 0
Jenner	292 0 0	147 18 6	99 5 0	300 15 5
Langridge	336 0 0	165 0 0	83 0 0	322 0 0
Free, Maidenhead	311 0 0	138 0 0*	87 10 0	317 0 0*
Wheeler	—	137 0 0	103 0 0	408 0 0
		*Accepted.		

ENFIELD.—For building stores and reading-rooms at the Chase Farm Schools, Enfield, for the Guardians of the Edmonton Union. Mr. T. E. Knightley, architect:—

J. W. Woodall	£354 0	Knight & Son	£335 0
H. S. Hardman	349 12	W. Lawrence, Waltham Abbey (accepted)	325 0
Gibson Bros.	344 0		

GREAT YARMOUTH.—For the erection of an isolation hospital on the North Denes, for the Urban Sanitary Authority. Mr. J. W. Cockrill, Borough Surveyor, Town Hall, Great Yarmouth. Quantities by Borough Surveyor:—

Linzell	£5,134 0 0	Cooper	£4,713 0 0
Hipwell	5,091 0 0	Rand	4,700 10 0
Cork	4,939 0 0	Howes	4,679 0 0
Davy	4,928 0 0	Grimble	4,654 10 0
Bray	4,880 0 0	Beech	4,640 10 0
Beckett	4,796 10 0	Eastoe, Great Yarmouth*	4,497 8 0
Bond	4,754 2 6		
Leggett	4,733 0 0	*Accepted.	

HALIFAX.—Accepted for the erection of weaving-shed and warehouse, Mytholmroyd, for Messrs. A. Robertshaw & Sons. Messrs. Jackson & Fox, architects, 22, George-street, Halifax. Quantities by the architects:—

Mason.—Oldfield Watson, Helden Bridge	£600 0 0		
Joiners.—Eli Alderson & Co., Luddenden Foot	182 10 0		
Slater and Plasterer.—John Robinson, Luddenden Foot	216 0 0		
Plumbers and Glaziers.—Jonas Alderson & Son, Luddenden Foot	66 10 0		
Ironfounders and Smiths.—Astin & Barker, Todmorden	325 0 0		
Concretors.—Taylor & Taylor, Openshaw, Manchester	72 9 0		
Patent Glazing.—W. H. Heywood & Co., Huddersfield	130 12 0		

HIGHGATE.—For the erection of the London & South-Western Bank, Highgate High-street. Messrs. Truefitt & Watson, architects, 5, Bloomsbury-square, W.C.:—

G. Ball	£5,450 0	Gould & Brand	£4,589 0
J. Hunt	4,900 0	A. A. Webber	4,397 0
Godfrey & Sons	4,792 0	Kelly & Son	4,350 0
A. J. Thompson	4,661 12	Lown & Son	4,275 0

LONDON.—For making up and paving Beryl and Orbain roads, for the Fulham Vestry. Mr. W. Sykes, New Streets Surveyor, Vestry Hall, Fulham, London, S.W.:—

	Beryl Road.					Orbain Road.				
	Roadway.	York.	Adamant.	Victoria.	Imperial.	Roadway.	York.	Adamant.	Victoria.	Imperial.
Nowell & Robson	897	487	—	—	—	635	377	—	—	—
Fry Bros.	770	465	325	—	—	535	305	255	—	—
G. Wimperis & Co.	720	460	345	—	—	522	364	273	—	—
E. Rogers & Co.	752	480*	—	—	—	494	387†	—	—	—
J. Mears	710	—	—	—	—	525	—	—	—	—
E. Parry	780	500	—	—	—	490	395	—	—	—
H. J. Greenham	695	—	—	—	—	495	—	—	—	—
S. Hudson	795	—	—	395	—	560	—	—	309	—
Imperial Stone Co.	—	—	—	—	341	—	—	—	—	27 3

* £452 if roadway tender accepted.
† £360 " " "

LONDON.—For the erection of new additional buildings to the St. Pancras Electric Lighting Station, Euston-road. Professor Henry Robinson, engineer, 13, Victoria-street, S.W.:—

Lenfield	£2,648 0 0	Lorden	£2,021 17 10
Schrien	2,417 3 9	Wall & Co.	1,997 0 0
Mowlem	2,295 16 1	Allen	1,985 0 0
H. & C. Lea	2,166 12 5	Millor	1,913 0 0
Wall	2,079 4 2	E. Houghton & Son, Stroud Green, N.*	1,876 4 0
Rowell Gover	2,095 0 0		
Culnan	2,035 0 0	* Accepted.	

LONDON.—For the construction of brick and pipe-sewers in Bayham-street, and three other streets, for the St. Pancras Vestry. Mr. Wm. N. Blair, C.E., Borough Engineer, Vestry Hall, Pancras-road, London, N.W.:—

Southampton-street.
C. W. Killingback & Co., James-street, Camden Town £441 0 0

Bayham-street.
R. Ballard, Child's Hill, Kilburn, N.W. 537 0 0

Little Clarendon-street.
R. Ballard, Child's Hill, Kilburn, N.W. 397 0 0

William-street.
R. Ballard, Child's Hill, Kilburn, N.W. 447 0 0

LONDON.—For new showroom, &c., for Messrs. Emery & Son, Bow, E. Messrs. Hammack & Lambert, architects:—

Cox	£1,453	Hearle & Farrow	£1,248
Wood	1,439	Hammond & Son	1,181
Calnan & Co.	1,298	White & Son	1,063

LONDON.—For additions to warehouse, for Messrs. Phillips & Sons, Commercial-street. Messrs. Hammack & Lambert, architects:—

Cox	£2,105	Hearle & Farrow	£1,998
Ashby & Horner	2,160	Calnan & Co.	1,956
Wood	2,140		

LONDON.—For alterations at the "Grapes" public-house, Seven Dials, W.C., for Mr. M. Ullmer. Mr. Edward Brown, architect, 5, Elder-street, Norton Folgate, E.:—

J. V. Kiddle & Son	£375	J. Howlett & Son	£333
Belcher & Co.	374	S. Salt (accepted)	320

For Pewterer's Work.

R. Davis & Son	£60 15	R. Pringle (accepted)	£59 10

MARYPORT.—For the construction of sewerage works, Ellenborough, for the Cockermouth Union Rural Sanitary Authority. Mr. Wilson, C.E., Court-house Buildings, Cockermouth:—

J. W. FitSimmons	£165 15 0	Ewd. Graham	£107 12 6
Smith & Marshall	137 2 0	Nicholson & Dixon	104 3 0
J. T. Harrison	131 17 0	Jno. Hunter, Maryport (accepted)	92 19 6
J. Whitfield	122 7 4		
Thos. Garner	115 19 2		

MITCHAM (Surrey).—For the execution of certain works of reinstatemnet for the Guardians of Holborn Union. Mr. H. S. Snell, architect, 22, Southampton-buildings, Chancery-lane, London, W.C.:—

W. Brown ..... £
Lorden & Sons .....
H. Wall & Co., Kentish Town (accepted) ....
[Schedule of Prices.]

NEWBURY.—For the erection of a technical institution, Northbrook-street, for the Corporation. Mr. Walter H. Bell, architect, Market-place, Newbury:—

G. Wernham	£2,450	Geo. Head	£1,409
E. James & Son	1,545	S. Elliott, Newbury*	1,393
G. Symonds	1,456	*Accepted.	

NEWTOWNARDS (Ireland).—For the erection of caretaker's house, wall, entrance, &c., for the Union Guardians. Mr. T. W. Lamon, engineer, Newtownards:—

For building 491 lineal yards of boundary wall 8 ft. in height, building pillars, and erecting entrance-gate.
John Hanna, Newtownards £459 0 0

For building caretaker's house, 32 ft. by 20 ft., two stories, and small office house.
Beatie & Binnie, Newtownards £180 0 0

For 606 yards of drainage and sewer.
John Graham, Lurgan £155 0 0

RICHMOND (Surrey).—For the erection of "Princess May's Wards" to the Royal Hospital. Mr. F. J. Brewer, architect, Richmond. Quantities by Mr. T. J. Carless, surveyor, Great Queen-street, Westminster, S.W.:—

Dove Bros.	£7,375	J. W. Brooking	£6,392
T. J. Messom	7,155	A. Lillywhite	6,280
Higgs & Hill	6,894	B. E. Blasby	6,150
C. Oldridge & Son	6,664	J. Darey & Co.	5,980
G. W. Heasler	6,541	A. Hunt	5,842
Sweet & Loder	6,497	S. N. Soole & Son	5,730
J. T. Chappell	6,448		

SEVENOAKS.—For alterations, additions, decorating, and sanitary works at Claridge House, Sevenoaks, Kent, for Mr. A. Druce. Mr. E. E. Cronk, architect :—

Bevan	£2,120	Wiltshire & Son	£1,970
Durtnall	2,049	Osborn, Orpington	1,198

SHELTON (Staffs.).—For additions and alterations to manufactory in William-street, for Messrs. Gray & Co. Messrs. R. Scrivener & Sons, Hanley :—

C. Cornes	£549	A. Ward	£430
A. & H. Salt	475		

SOUTH CROXTON (Leicestershire).—For erection of stabling, coach-house, &c. Messrs. Miles & Beasley, architects and surveyors, Leicester. Quantities by architects :—

J. Stevens	£547 10	C. Broughton, Hungarton (accepted)	£497 0
F. Sleath	511 17		
M. Hickling	500 0	E. Clarke	465 0

WALTHAMSTOW.—For making up and laying concrete flags, Spruce Hills, St. John's, and Shaftesbury roads, for the Local Board. Mr. G. W. Holmes, C.E., Surveyor, Town Hall, Walthamstow :—

Making up.

John Jackson	£1,471 18 4	J. Reeves, Walthamstow (accepted)	£1,354 0 0
Jesse Jackson	1,427 0 0		

[Paving not decided.]

WEST HAM.—For repairing twenty-eight houses, Siddington-road, West Ham, for Mr. W. R. Dodson. Mr. Edward Brown, architect, 5, Elder-street, Norton Folgate, E. :—

J. V. Kiddle & Son	£635 0	J. Howlett & Son	£357 0
F. G. Higgs	560 0	J. Young (accepted)	306 4

WHITLAND (Carmarthenshire).—For the erection of a "Temperance" Hotel, for Mr. J. Phillips. Mr. R. S. Griffiths, architect, Tonypandy, Rhondda Valley :—

Jas. Williams & Son	£1,780	Dd. Rees, Whitland*	£1,250
J. Rees & Sons	1,530		

* Accepted.

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TO CORRESPONDENTS.

G. T. H. (too late)—G. B. (we cannot publish tenders so long after date).—A. S. (thanks: not required).—E. C.—H. H.—E. & Sons.—H. B. N.—J. B. (address noted).—J. G. (it is a legal question, which must be referred to a lawyer).—L. & A.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

PUBLISHER'S NOTICES.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.

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Each additional line (about ten words) ..... 0s. 6d.

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*** Stamps *must not* be sent, but all small sums should be remitted by Cash in Registered Letter or by Postal Orders, payable to DOUGLAS FOURDRINIER, and addressed to the Publisher of "THE BUILDER," No. 46, Catherine-street, W.C.

Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY but "Classification cannot be guaranteed for any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the front Page should be in by TWELVE noon on WEDNESDAY.

SPECIAL.—ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before 10 a.m. on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

PERSONS Advertising in "The Builder," may have *Replies addressed to the Office, 46,* Catherine-street, Covent Garden, W.C. *free of charge.* Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES, { NINEPENCE EACH. By Post (carefully packed), 1s

ESTABLISHED 1866.

J. J. ETRIDGE, Jr.

SLATE MERCHANT,

SLATER and TILER.

ESTIMATES GIVEN FOR

SLATING AND TILING,

To be Executed by Contract in any part of ENGLAND.

Penrhyn - Bangor,
Oakeley - Palmerston,

And other description of Slates ready for immediate delivery to any Railway Station.

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BETHNAL GREEN SLATE WORKS,
BETHNAL GREEN, LONDON, E.

THE BATH STONE FIRMS, Ltd.
BATH,
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening and Preserving Calcareous Stones and Marbles.

HAM HILL STONE,
The attention of Architects is specially invited to the durability and beautiful colour of this material. Quarries well opened. Quick despatch guaranteed. Stonework delivered and fixed complete. Samples and estimates free. Address, The Ham Hill Stone Co., Norton, Stoke-under-Ham, Somerset. London Agent: Mr. E. A. Williams, 16, Craven-st., Strand, W.C. [Advt.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 44, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [Advt.

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch.
METCHIM & SON, 20, Parliament-st., S.W.
"QUANTITY SURVEYORS' TABLES AND DIARY" For 1893, price 6d. post 7d. In leather 1/- Post 1/1. [Advt.

SPRAGUE & CO.'S
INK-PHOTO PROCESS,
4 & 5, East Harding-street,
Fetter-Lane, E.C. [Advt.

MICHELMORE & REAP,
Manufacturers of

COLLINGE'S PATENT HINGES, LEVER, SCREW, & BARREL BOLTS,
Self-Acting "FALL DOWN" GATE STOPS, and IMPROVED GATE FITTINGS of every description.
36A, BOROUGH ROAD, LONDON, S.E.
PRICES REDUCED. LIST SENT ON APPLICATION

THE
French Asphalte
COMPANY,

Suffolk House, Cannon-street, E.C.

SUPPLY THE BEST MATERIAL AND WORKMANSHIP FOR BUILDINGS, DAMP COURSES, AREAS, ROOFS, WASH-HOUSE AND DAIRY FLOORS, &c., &c.

This Asphalte was chosen to be laid at Sandringham, on the new General Post Office, and other important buildings.

TWELVE GOLD AND SILVER MEDALS AWARDED.

IRON CISTERNS.

F. BRABY & CO.

VERY PROMPT SUPPLY.
LARGE STOCK READY.

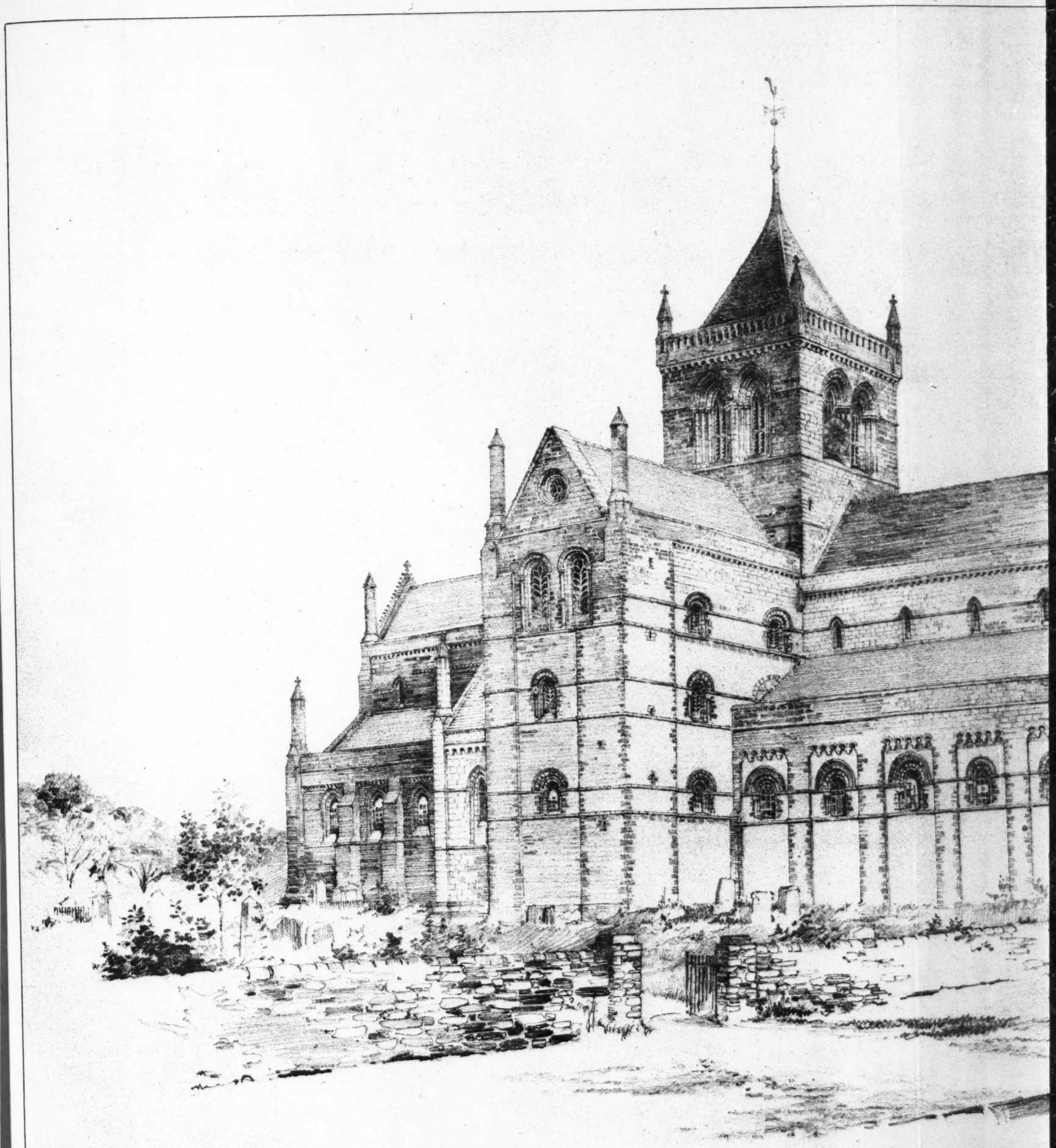
Particulars on application.

CYLINDERS FOR HOT-WATER CIRCULATION.

LONDON:
352 to 364, EUSTON-ROAD N.W., and
218 and 220, HIGH-STREET, BOROUGH, S.E.

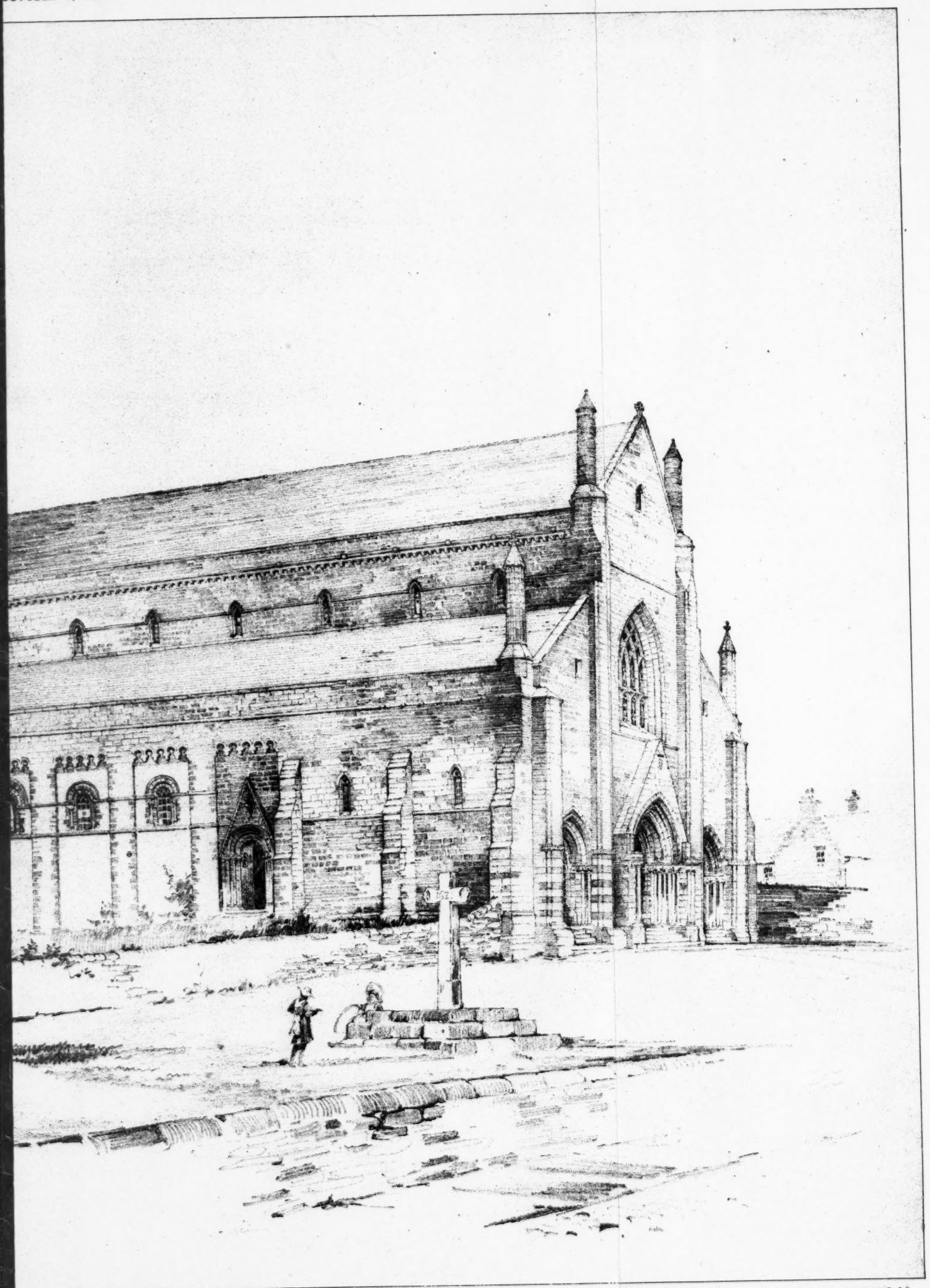
LIVERPOOL:
6 and 8, HATTON GARDEN.

GLASGOW:
47 and 49, ST. ENOCH-SQUARE



THE ANCIENT CATHEDRALS OF SCOTLAND.—DRAWN

No. 4. ST. MAGNUS, KIRKWALL.

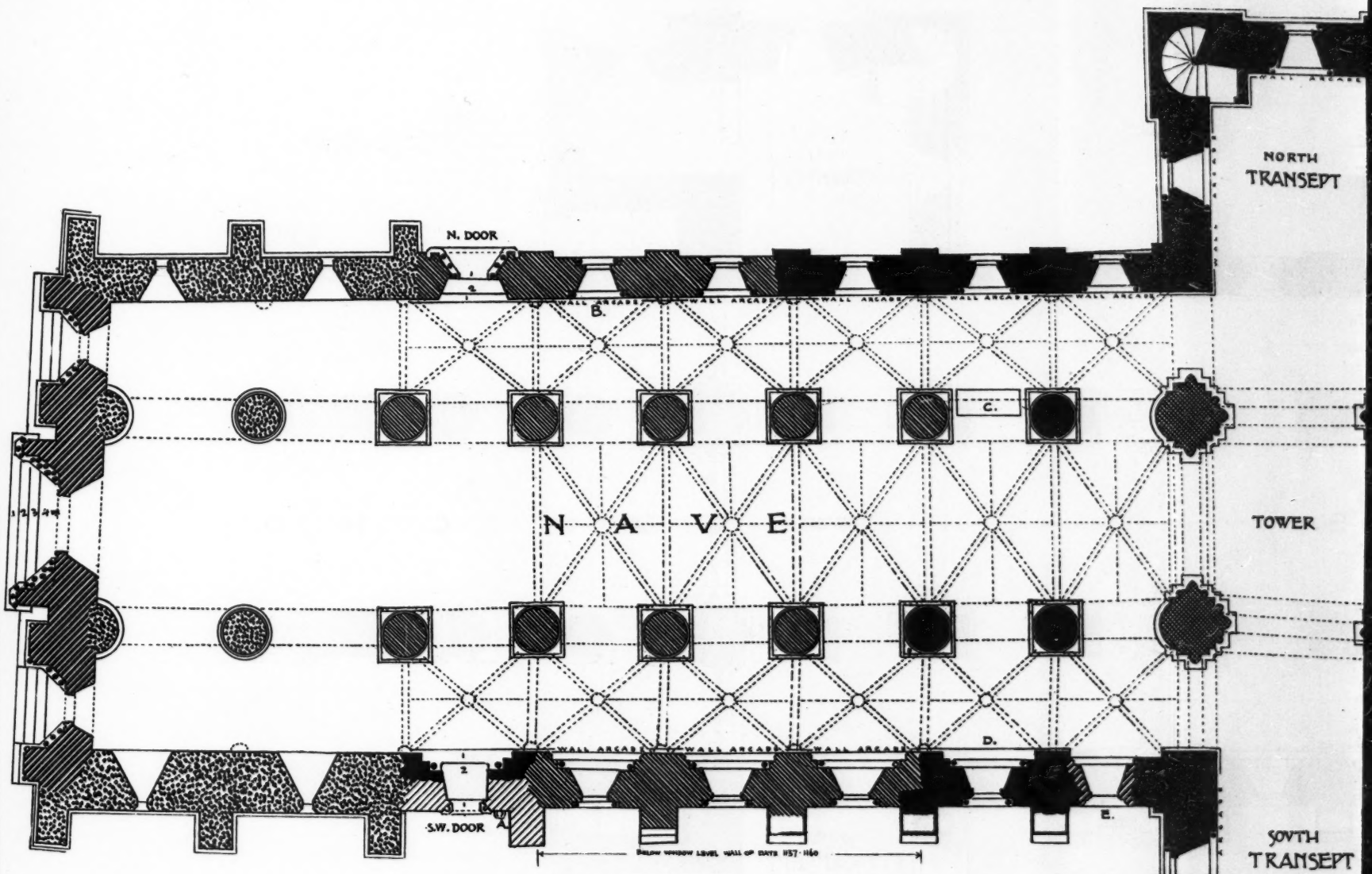


IN PHOTO SPRAGUE & Co 4 & 5 EAST HARDING STREET FETTER LANE E.C.

TLAND.—Drawn by Mr. Alexander McGibbon.

NUS, KIRKWALL.

St. Magnus' Cathedral: Kirkwall: Orkney.



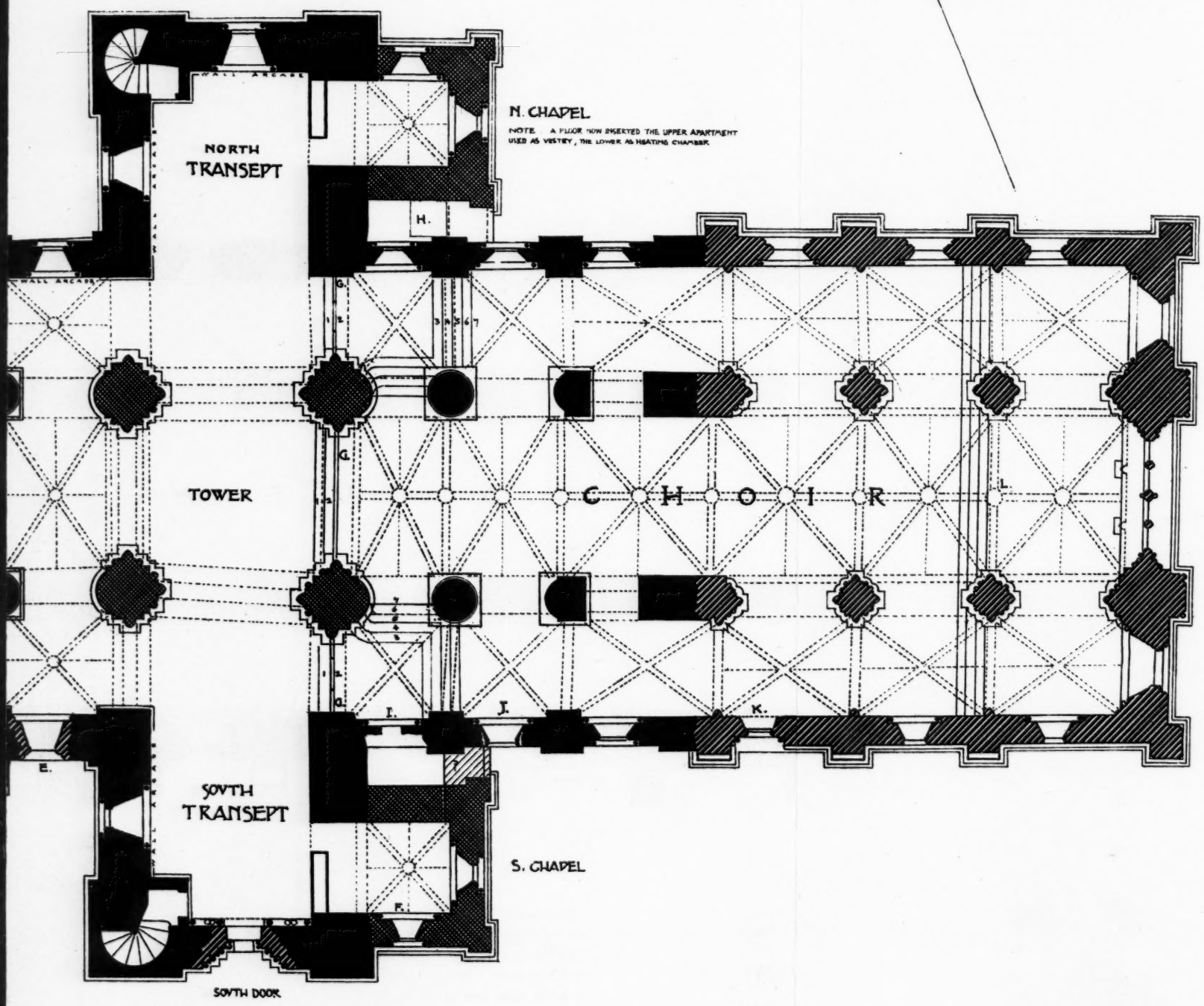
DATES

- 1137 - 1160
- 1160 - 1200
- 1200 - 1250
- 1250 - 1350
- 1450 - 1500
- 1540 - 1558
- 1850

A. Water Stoup
B. This bay of Arcade only of Third period
C. Cenotaph to Dr Baikie
D. Wall Tomb under c. 1500
E. Original door built up
F. Aumbry & Piscina under window
G. Modern wood partition
H. Built chimney stalk here
I. Window originally, transformed into door to chamber
J. Window altered when wall built between chapel and Aisle
K. Door, made window in 1850
L. Altar steps now concealed.

Scale 10 5 0 10 20 30

EY.



Based on Plans by Sir Henry E. L. Dryden measured in 1844-55 and published in '71. Windows and Vaulting now shown.
Alex.r M.c Gibbon '93.

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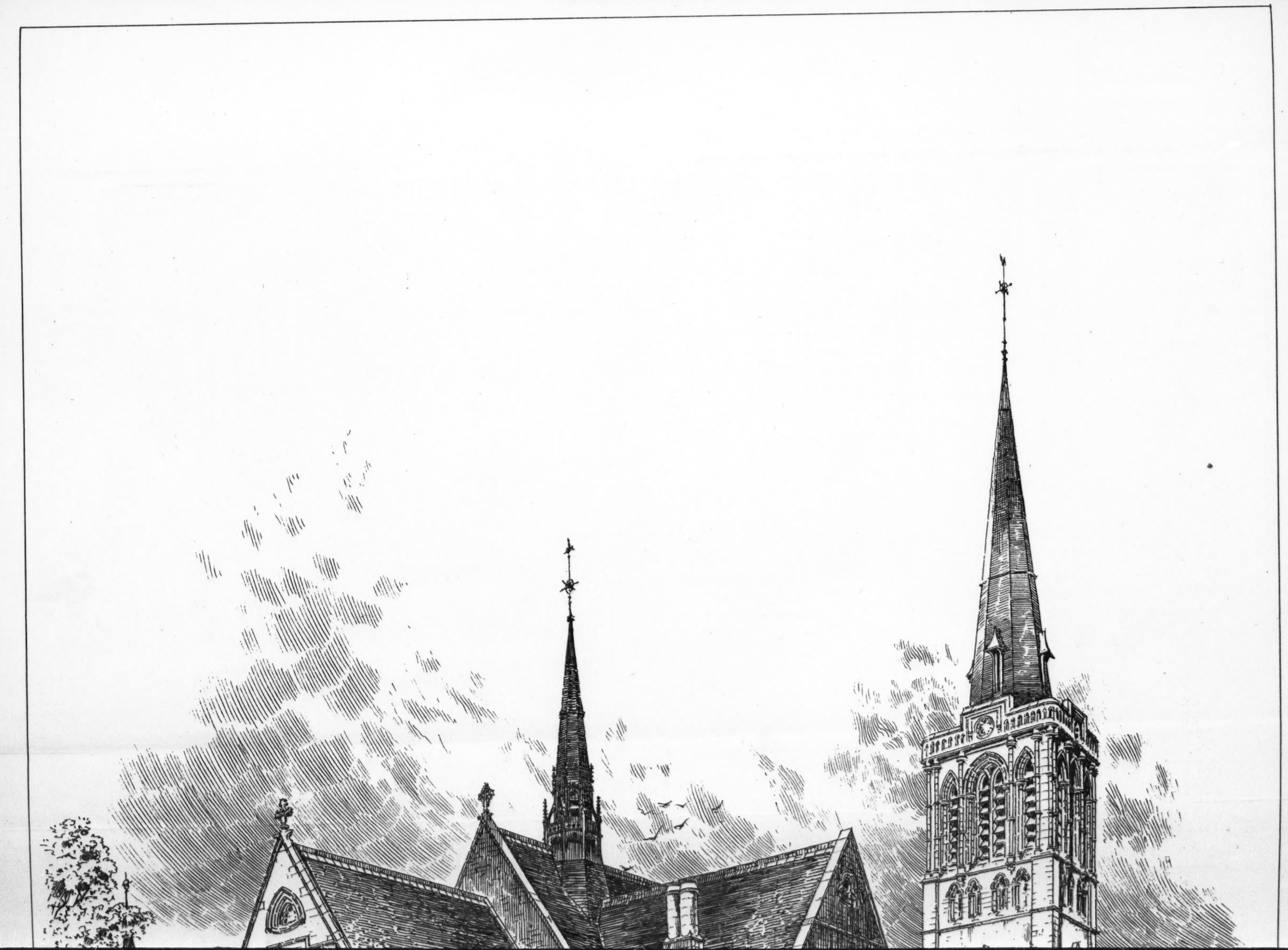

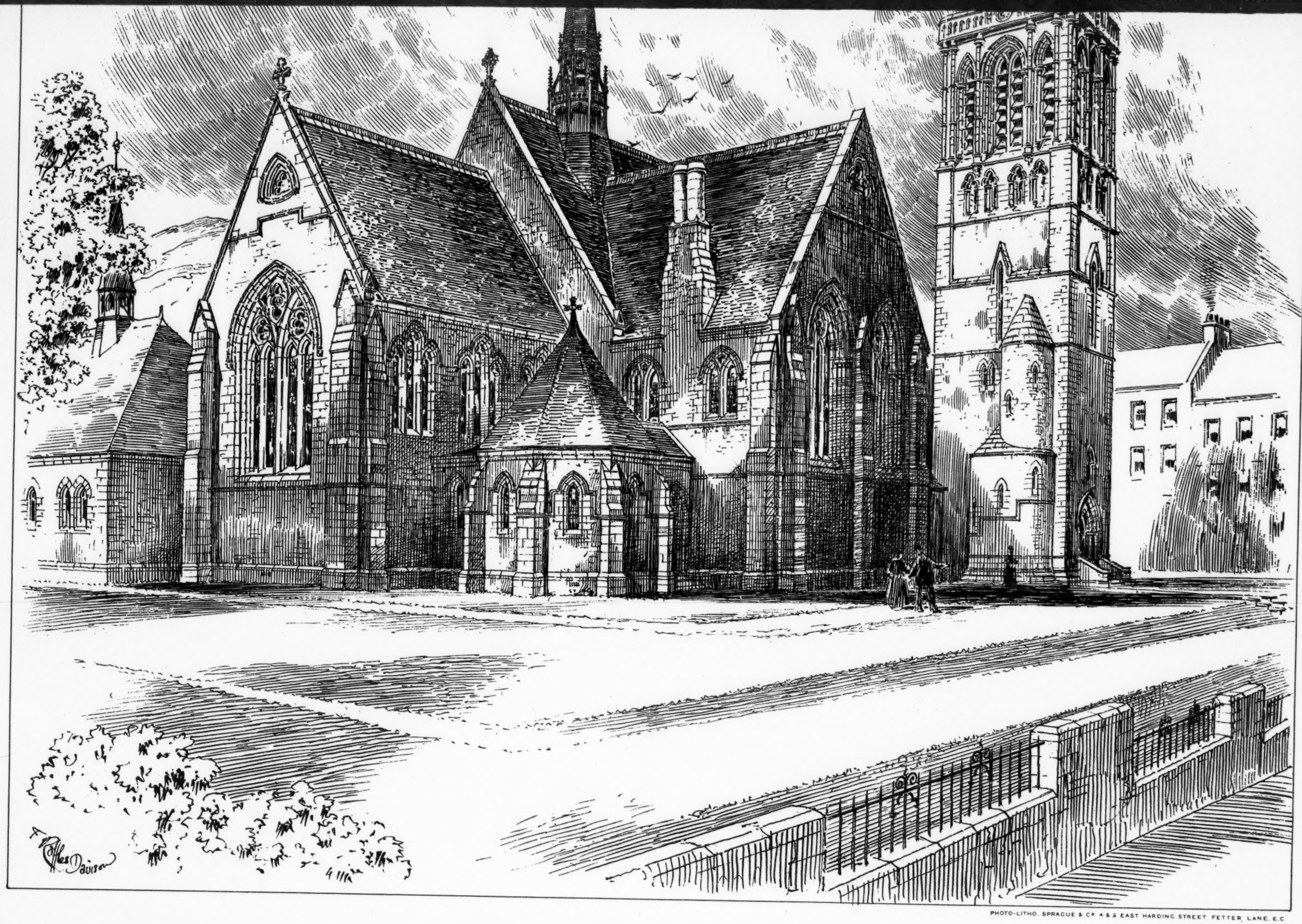

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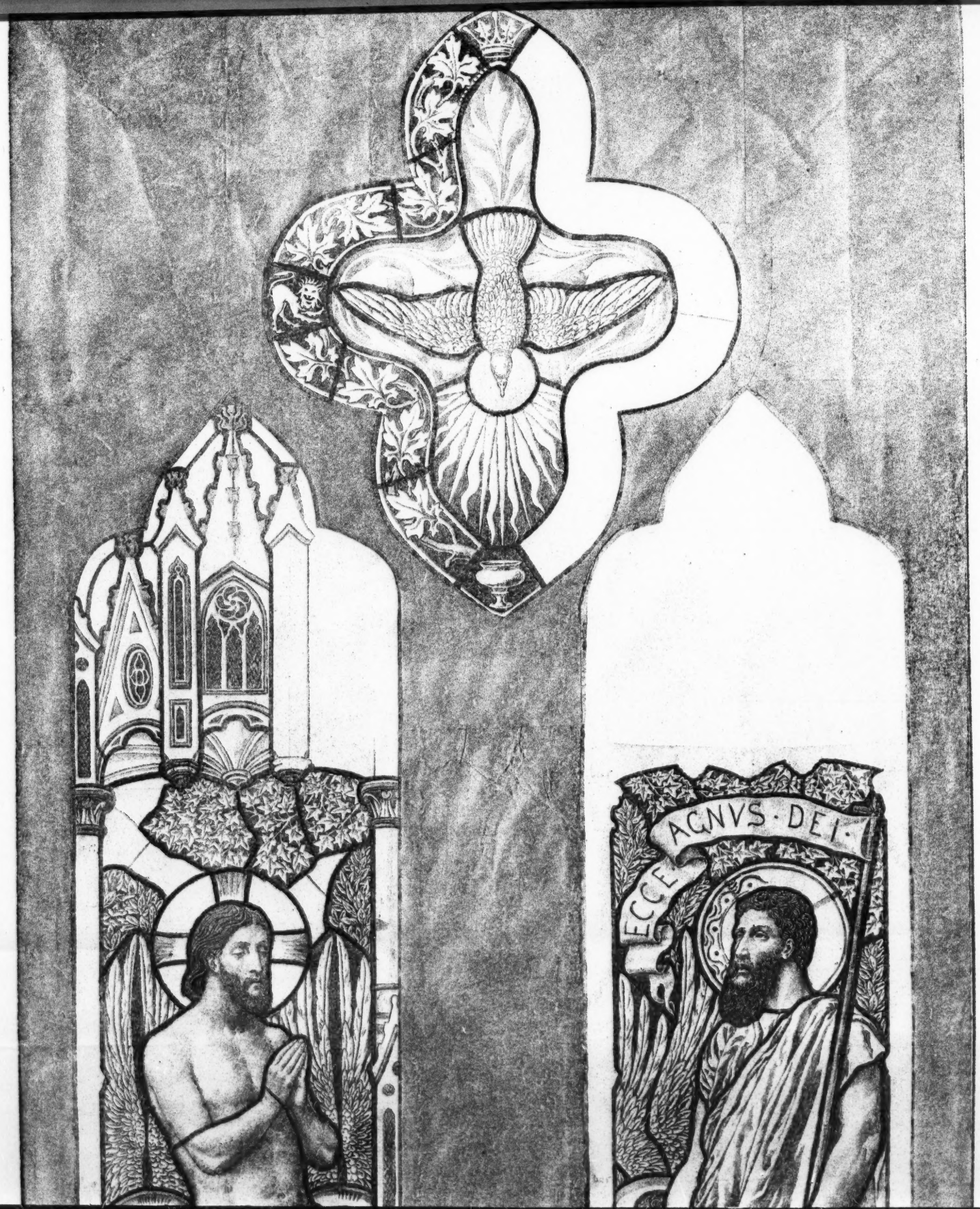
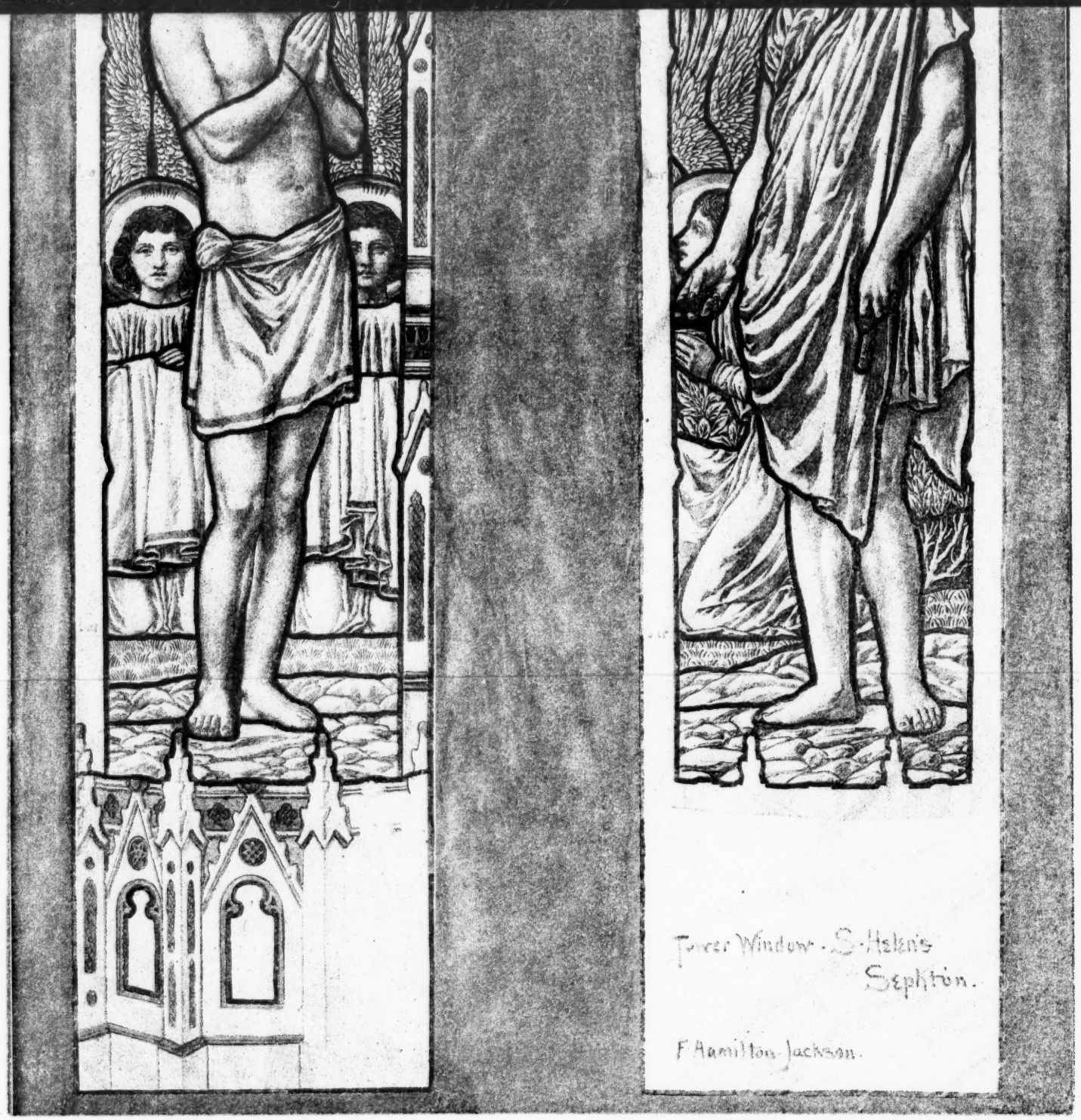
ST. MATTHEW'S CHURCH, MORNINGSIDE, EDINBURGH.—Mr. Hippolyte J. Blanc, Architect.

Royal Academy Exhibition, 1893.


ECCE AGNVS · DEI ·



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CARTOON FOR A WINDOW.—By Mr. F. Hamilton Jackson.